

# **EXHIBIT 64**

1 UNITED STATES DISTRICT COURT

2 FOR THE

3 DISTRICT OF VERMONT

4 -----  
5 JAMES D. SULLIVAN, LESLIE ADDISON,  
6 SHARYN JONES and BISHOP ROBIN HOOD  
7 GREENE, individually, and on behalf of  
8 a Class of persons similarly situated,  
9 Plaintiffs,

10 -vs-

5:16-cv-00125

11 SAINT-GOBAIN PERFORMANCE PLASTICS CORPORATION,  
12 Defendant.

13 -----  
14 VIDEOTAPED DEPOSITION OF

15 DONALD SIEGEL, Ph.D.

16 March 22, 2018

17 8:37 a.m.

18  
19 Reported by: Pamela Palomeque, RPR, CRR, NYRCR  
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Videotaped Deposition of  
DONALD I. SIEGEL, Ph.D, held at the offices  
of SUGARMAN LAW FIRM, Syracuse, New York,  
on March 22, 2018, before PAMELA PALOMEQUE,  
NYRCR, RPR, CRR, and Notary Public in and  
for the State of New York.

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20 Videographer  
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22  
23  
24  
25

## EXAMINATIONS

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1 THE VIDEOGRAPHER: Good morning. We are  
2 going on the record at approximately  
3 8:37 a.m. on March 22nd, 2018. Please note  
4 that the microphones are sensitive and may  
5 pick up whispering, private conversations,  
6 and cellular interference. Please turn off  
7 all cell phones or place them away from the  
8 mics as they can interfere with deposition  
9 audio. Audio and video recording will  
10 continue to take place until all parties  
11 agree to go off record.

12 This is media unit number 1 of the video  
13 recorded deposition of Donald Siegel in the  
14 matter of James D. Sullivan, et al. versus  
15 Saint-Gobain Performance Plastics, et al.,  
16 filed in US District Court, Vermont. This  
17 deposition is being held at Sugarman Law  
18 Firm, located at 211 West Jefferson Street,  
19 Syracuse, New York.

20 My name is Mark Whalen from the firm  
21 Veritext Legal Solutions. And I am the  
22 videographer. The Court Reporter is Pamela  
23 Palomeque from the firm Veritext Legal  
24 Solutions. I am not authorized to administer  
25 an oath. I'm not related to any party in

1           this action nor am I financially interested  
2           in the outcome.

3           Counsel and all present in the room and  
4           everyone attending will now state their  
5           appearances and affiliations for the record.  
6           If there are any objections to proceeding,  
7           please state them at the time of your  
8           appearance, beginning with the noticing  
9           attorney.

10           MR. LaFATA: This is Paul LaFata from  
11           Quinn Emanuel for Saint-Gobain.

12           MR. LoCASTRO: Nicholas LoCastro, Quinn  
13           Emanuel for the Defendant Saint-Gobain.

14           MR. DAVIS: Gary Davis for the  
15           Plaintiffs.

16           THE VIDEOGRAPHER: Thank you. Would the  
17           Court Reporter please swear in the witness.

18  
19       D O N A L D     I.     S I E G E L,     Ph.D., having been  
20       called as a witness, being duly sworn by the notary  
21       public present, testified as follows:

22       EXAMINATION BY MR. LaFATA:

23           Q.     Please state your name for the record.

24           A.     My name is Donald I. Siegel.

25           Q.     Good morning, Dr. Siegel, my name is Paul



1 LaFata. We met briefly this morning. Plaintiffs'  
2 counsel have retained you in this case to analyze and  
3 provide opinions about Perfluorooctanoic acid, PFOA, in  
4 the groundwater in North Bennington and Bennington,  
5 Vermont; correct?

6 A. Correct.

7 Q. You were also asked to provide an opinion  
8 regarding the scientific development and knowledge of  
9 the environmental migration pathways of PFOA; correct?

10 A. Correct.

11 Q. Now, as general principles, you would agree  
12 that a scientific investigator should try to look at  
13 issues critically; correct?

14 A. Correct.

15 Q. And scientific investigators are concerned  
16 about being accurate; correct?

17 A. Correct.

18 Q. And as a scientific investigator, do you  
19 subscribe to the principle it is important to use  
20 accuracy and precision in your writings?

21 A. Yes.

22 Q. And have you published writings in  
23 peer-reviewed scientific literature?

24 A. Yes.

25 Q. Do you ensure that your published writings,

1     that what you say is accurate and truthful to the best  
2     of your knowledge in that literature?

3           A.     Yes.

4           Q.     Do you believe that scientists should  
5     describe their methods and explain their reasoning so  
6     that others can understand how the data were analyzed  
7     and how the conclusions were reached?

8           A.     Yes.

9           Q.     And in a scientific inquiry, is it is  
10    essential for scientific investigators to show their  
11    work; correct?

12          A.     Yes.

13          Q.     You would agree that criticism and rigorous  
14    attempts at reputation of a hypothesis being advanced  
15    are integral parts of the scientific method?

16          A.     Could you repeat that?

17          Q.     You would agree that criticism and rigorous  
18    attempt at reputation of a hypothesis are integral parts  
19    of a scientific method; correct?

20          A.     Yes.

21          Q.     You would agree that one of the hallmarks of  
22    science is the requirement of valid and reliable data;  
23    correct?

24          A.     Yes.

25          Q.     In your opinion is it important to assess all

1 the available data relevant to the question at hand  
2 before arriving at a conclusion?

3 A. All pertinent available data to the  
4 conclusion.

5 Q. Before arriving at the conclusion?

6 A. Well, sometimes in science you have to  
7 arrive at a conclusion before all potential available  
8 data is there. Science proceeds, you know,  
9 incrementally; right?

10 Q. Let me try it this way. Would you agree it's  
11 important before arriving at a scientific conclusion to  
12 look at all the pertinent data available to you at the  
13 time?

14 A. I guess it depends on what you define as  
15 "pertinent." One can arrive at a conclusion based on  
16 sometimes small sets of data that show a compelling  
17 scientific story of what's going on.

18 Q. Is it appropriate to arrive at a scientific  
19 conclusion without considering key available data to  
20 you?

21 A. No, I think you have to consider the key  
22 data.

23 Q. Do you agree that there isn't a study that  
24 ought to be considered in isolation; you want to  
25 consider the pertinent literature on the subject of that

1 study?

2 A. Yes.

3 Q. Do you agree that the available papers should  
4 be considered in scientific deliberation and that  
5 selective consideration of literature is not a  
6 scientific procedure?

7 MR. DAVIS: I'm going to object to the  
8 question as compound and vague.

9 Q. You can answer.

10 A. Could you repeat the question?

11 Q. Yes. Do you agree that all the scientific  
12 papers should be considered in scientific deliberation  
13 on the issue at hand and that selective consideration of  
14 literature is not a scientific procedure?

15 A. I don't think it's necessary to review all  
16 papers on a particular issue. And often it's sufficient  
17 to look at review papers and papers that one would  
18 consider more appropriate than others.

19 Q. Let me try it this way. Do you agree that  
20 cherry picking scientific papers out of a body of  
21 literature is not a scientific method?

22 MR. DAVIS: I object to the question;  
23 it's a vague term.

24 Q. You can answer.

25 A. In doing science, one often selects those

1 papers and methods that one views as most appropriate to  
2 solving a problem at hand. I wouldn't call that cherry  
3 picking. I'd call that critical assessment.

4 Q. In your opinion is it scientifically valid to  
5 use one hypothesis to prove another hypothesis?

6 MR. DAVIS: Objection, vague.

7 A. Use one hypothesis to prove -- I don't  
8 understand what you mean by that.

9 Q. Are you familiar with the scientific method?

10 A. Oh, yes.

11 Q. In the scientific method is it appropriate to  
12 use one hypothesis to prove another hypothesis?

13 A. No, you select data to test whether a  
14 hypothesis may be true or not.

15 Q. What is the null hypothesis?

16 A. The null hypothesis, the null hypothesis  
17 basically is, deals with proving something wrong.

18 Q. As a general concept, do you agree that in a  
19 scientific inquiry it's not proper to double or triple  
20 count the same data when you're making a sum of that  
21 data?

22 MR. DAVIS: Objection as vague.

23 A. Explain to me by -- take the same data set  
24 and you multiply it by itself?

25 Q. Yes.

1           A.       That is not generally appropriate.

2           Q.       When you review scientific data, do you pay  
3 attention to the methods that the investigators use to  
4 assemble that data?

5           A.       Yes.

6           Q.       Do you pay attention to the limitations that  
7 those scientific investigators place on the data that  
8 they collect?

9           A.       Yes.

10          Q.       Do you agree it's important to pay heed to  
11 those limitations that the scientific investigator  
12 expresses about the data they collect?

13          A.       Yes.

14          Q.       Do you agree that it is scientifically  
15 unsound for a scientific investigator to ignore data  
16 that do not appear to support a hypothesis?

17                   MR. DAVIS: Objection, the question is  
18 vague.

19          A.       I think it's inappropriate to ignore but  
20 often you do find in large data sets what are known as  
21 outliers.

22          Q.       Do you hold yourself as expert in the field  
23 of hydrogeology?

24          A.       Yes.

25          Q.       Hydrogeology is a science that studies the

1 movement of groundwater through the earth; correct?

2 A. Correct.

3 Q. Do you have experience in the field of  
4 hydrogeology?

5 A. Yes.

6 Q. Do you have experience drilling?

7 A. Yes.

8 Q. Do you have experience sampling soil?

9 A. Yes.

10 Q. Do you have experience sampling water?

11 A. Yes.

12 Q. Experience testing the water?

13 A. Yes.

14 Q. Do you have experience surveying?

15 A. Yes.

16 Q. Do you have experience with modeling  
17 underground water flow?

18 A. Yes.

19 Q. What about using water flow software  
20 programs?

21 A. Yes.

22 Q. Do you have experience using MODFLOW?

23 A. Yes.

24 Q. You're not an expert in air emissions  
25 modeling; correct?

1 A. No.

2 Q. You're not an epidemiologist, are you?

3 A. No.

4 Q. You're not a medical doctor, are you?

5 A. No.

6 Q. You're not an expert in the law, are you?

7 A. No.

8 Q. The opinions you're offering in this case are  
9 limited to the field of hydrogeology; correct?

10 A. They're limited to the field of hydrogeology  
11 and geochemistry, which is the science of water  
12 chemistry, and I'm offering opinions related to  
13 contaminant transport and fate.

14 Q. Do you hold yourself out to your peers as an  
15 expert in organic chemistry?

16 A. How would you define "an expert in organic  
17 chemistry"?

18 Q. I'm asking you do you hold yourself out to  
19 your peers in the community as an expert in organic  
20 chemistry?

21 A. I believe I have expertise in organic  
22 chemistry in the context of how organic chemicals move  
23 in the subsurface. To that extent, yes.

24 Q. Have you presented papers on organic  
25 chemistry?



1 A. Yes.

2 Q. You provided a report of your opinion in this  
3 case on the issue of class certification. Do you recall  
4 that?

5 A. Yes.

6 Q. I'm going to refer to that today as your  
7 report. Do you understand that?

8 A. Yes.

9 Q. You also provided a sworn Declaration along  
10 with your report; correct?

11 A. By "sworn Declaration," show that to me,  
12 please, so I know what you're talking about.

13 Q. Do you recall providing a sworn Declaration  
14 in this case along with your report?

15 A. I must have because you just asked me that.

16 Q. You believe you did?

17 A. Yes, to the best of my recollection.

18 Q. That's fine. Does your class certification  
19 report contain a complete statement of the opinions  
20 you'll express on the issue of class certification in  
21 the case?

22 A. To the extent that the data that's available  
23 now will per -- pertains to it.

24 Q. Was that a yes to my question?

25 A. Yes, but qualified in that data still is

1 being collected with respect to the case in question and  
2 so I reserve the right to modify opinions, if requested,  
3 based on new data that might come forth.

4 Q. Does your class certification report contain  
5 all the bases and reasons for your opinion on the issues  
6 you expressed in that report?

7 A. To the extent, again of the data that I  
8 reviewed, yes.

9 Q. Dr. Siegel, I'm handing you a copy of  
10 Declaration of Donald I. Siegel, Ph.D. Do you see that?

11 A. Yes.

12 Q. Would you flip to the last page of this on  
13 the back? Do you see a signature there?

14 A. Yes.

15 Q. Is that your certification?

16 A. That's me.

17 Q. Do you recall having signed this?

18 A. I recall doing this, yes.

19 Q. Look with me at paragraph 6.

20 MR. DAVIS: Excuse me, do you have this?  
21 Do you have this marked as Exhibit 36; is  
22 that right? It's marked at the bottom. Is  
23 this going to be an exhibit?

24 MR. LaFATA: This is on the document  
25 when it's filed.

1 MR. DAVIS: Are you going to make it an  
2 exhibit so you can identify --

3 MR. LaFATA: I'm going to ask him  
4 questions. Is that an objection?

5 MR. DAVIS: It's not an objection.

6 BY MR. LaFATA:

7 Q. To paragraph 6 on page 2 do you see, "I have  
8 prepared an expert report"?

9 A. Yes.

10 Q. Okay. It says, I have prepared an expert  
11 report, which contains a complete statement of all  
12 opinions I will express on the issue of class  
13 certification, and the basis and reasons for them, as  
14 well as the facts or data I considered in forming these  
15 opinions." Do you see that?

16 A. Yeah.

17 Q. This is accurate, right?

18 A. That's correct.

19 Q. Do you plan to offer any other opinions about  
20 the case regarding class certification that do not  
21 appear in your report or the Declaration?

22 A. As I said, if new data comes forth in the  
23 future and I'm asked to provide a supplemental report to  
24 this, then I will do this.

25 Q. When you signed this, you were providing all

1 the opinions you had then; correct?

2 A. At that time.

3 Q. Did you draft the Class Certification Report  
4 yourself?

5 A. Yes.

6 Q. And to the best of your knowledge is  
7 everything you put in that report when you drafted it  
8 accurate and true?

9 A. Yes.

10 Q. All right. I'd like to mark this as A,  
11 please. Would you mark that A?

12 (Exhibit A, Declaration of Donald I.  
13 Siegel, Ph.D., marked for identification,  
14 this date.)

15 Q. All right. Dr. Siegel, do you recognize the  
16 document I handed you?

17 A. Yes.

18 Q. This is the report we talked about earlier;  
19 right?

20 A. Yes.

21 Q. Would you please turn with me to page SOQ-2.  
22 Just a few pages in from the front.

23 A. Got it.

24 Q. Is that your signature on that page?

25 A. Yes.

1 Q. All right. This section of this report is a  
2 summary of your opinion, correct?

3 A. Correct.

4 Q. And then through the other sections of the  
5 report you state your opinion, correct?

6 A. Correct.

7 Q. And then at the end of the report there's a  
8 section References Cited. Do you see that?

9 A. Correct.

10 Q. This is where you cite the references you use  
11 to prepare your report, correct?

12 A. Yes.

13 Q. That's right after Page 68.

14 A. Yes.

15 Q. And then after the References section you  
16 have a section called Figures, right?

17 A. Yes.

18 Q. Okay. Figure 2 is a map of the  
19 Bennington/North Bennington area, correct?

20 A. Correct.

21 Q. This is a map from -- it says adapted from  
22 VT-DEC sample report dated 27 April 2017. Do you see  
23 that at the bottom?

24 A. Yes.

25 Q. And figure 5 to your report are static water

1 levels, correct?

2 A. Correct.

3 Q. Figure 6 are the domestic water yields that  
4 you got from the article, correct?

5 A. Correct.

6 Q. Figure 7 is a map which you say shows a  
7 plume, correct?

8 A. Yes.

9 Q. Did you make this map?

10 A. Yes.

11 Q. And you use the colored areas in this map  
12 to -- for your opinion about the mass of PFOA in the  
13 area, right?

14 A. Could you repeat that?

15 Q. You used the color figures you put in this  
16 map to get your mass for the PFOA in the area, correct?

17 A. Correct.

18 Q. And would you turn back with me to your  
19 References list?

20 A. Mm-hmm.

21 Q. After the figures we just went through,  
22 there's a another section, your CV?

23 A. Correct.

24 Q. Is this a complete CV of yourself at the  
25 time?

1           A.       At the time, yes.

2           Q.       Under employment you said that you worked for  
3       the U.S. Geologic Survey from 1976 to 1982; is that  
4       correct?

5           A.       Right.

6           Q.       What did you do after that?

7           A.       After that I went to the University of  
8       Minnesota to do my doctorate.

9           Q.       After this section you have an Appendix B,  
10       right?

11          A.       Correct.

12          Q.       It says Documents Reviewed by IES, correct?

13          A.       Right.

14          Q.       These are documents you used to prepare your  
15       opinion in this case, right?

16          A.       Some of these.

17          Q.       Are there some here you did not use?

18          A.       No.

19          Q.       So these are documents you did look at for  
20       your opinion?

21          A.       I looked at them. Some were useful and some  
22       were not.

23          Q.       Sure, sure. The first section there says  
24       documents provided by Langrock, Sperry & Wool, LLP. Do  
25       you see that?

1 A. Correct.

2 Q. Who are they?

3 A. These are the attorneys that retained me.

4 Q. How did they provide the documents to you?

5 A. They sent them usually through the Internet.

6 Q. Okay. And who selected the documents that  
7 they provided?

8 A. I think most of them were selected by them.

9 Q. Okay. Was there an occasion where you asked  
10 them for a document that was not provided to you?

11 A. No.

12 Q. Then there's a second section in here,  
13 Documents Downloaded From Vermont DEC Online Database.  
14 Do you see that?

15 A. Yes.

16 Q. Who downloaded these documents?

17 A. Some of these we downloaded from IES and  
18 others counsel had alerted us to so we downloaded them.

19 Q. Okay. Who selected these documents to  
20 download?

21 A. We went to the Vermont -- for the documents  
22 I used mostly in my report, you know I selected them.

23 Q. You mentioned IES a few times.

24 A. Yes.

25 Q. What is IES?



1           A.       IES is Independent Environmental Scientists;  
2       it's a small firm, which I'm partner.

3           Q.       You work there full-time?

4           A.       No.

5           Q.       How many people work for IES?

6           A.       Four.

7           Q.       And who at IES reviewed the documents for  
8       this case for you?

9           A.       Ed Hinchey, my partner.

10          Q.       Did Ed Hinchey have any part in arriving at  
11       your opinion in this case?

12          A.       No. He helped look at some of the data and  
13       then would provide me some information but then I would  
14       write the report.

15          Q.       Other than Ed Hinchey, did anyone else at IES  
16       review documents in support of this case?

17          A.       No.

18          Q.       You don't state in your report you relied on  
19       the class certification of Phil Hopke, correct?

20          A.       No, I relied on the class certification -- I  
21       relied on the zone of influence where PFOA occurs in  
22       groundwater that the state had prepared, state of  
23       Vermont.

24          Q.       Why did you not rely on the expert report --  
25       Class Certification Report of Phil Hopke in this case?

1           A.       Well, I guess I assumed they're essentially  
2       the same.

3           Q.       "They" meaning --

4           A.       That the two class certifications --

5           Q.       Which two of those?

6           A.       Well, the class certification that Phil  
7       Hopke would have presented and the area affected by the  
8       PFOA that the State had prepared.

9           Q.       You also provided a second expert report on  
10       certain issues pertaining to the merits of this case,  
11       correct?

12          A.       Correct.

13                   MR. LaFATA: If we didn't mark that, I'd  
14       like to mark that as B.

15                   (Exhibit B, "Perfluorooctanoic Acid  
16       (PFOA) Contamination in Groundwater in North  
17       Bennington Vermont", by IES, 9/1/17, marked  
18       for identification, this date.)

19          Q.       Does the second report contain a complete  
20       statement of all the opinions you will express in the  
21       merits of this case?

22          A.       Yes.

23          Q.       And does your merits report contain all the  
24       facts and data you considered in forming your opinion  
25       when you issued the report?

1 A. Yes.

2 Q. Do you plan to offer any other opinions about  
3 the merits of the case that do not appear in your merits  
4 report?

5 A. I guess that depends what you ask me.

6 Q. Let me ask it this way. When you issued your  
7 merits opinion, that's a complete statement of your  
8 opinion when you issued your opinion?

9 A. Yes.

10 Q. And that second report, is that report  
11 accurate and true to the best of your knowledge?

12 A. Yes.

13 Q. Your fees in connection with this case are  
14 \$300 per hour, correct?

15 A. Correct.

16 Q. And about, ballpark, about how many hours  
17 have you spent working on the case?

18 A. Boy, I don't know. I haven't tabulated, you  
19 know. It's been -- I don't know.

20 Q. What's your best estimate?

21 A. I'd have to go back and look. I don't want  
22 to estimate because I know if I estimate it wrong,  
23 then --

24 Q. Well, you have records of that, right?

25 A. Yeah.

1 Q. So you rely upon those records --

2 A. I'd have -- yeah, I would have to contact  
3 the company and just have them --

4 Q. Let me finish my question first. You would  
5 look at those records to state with precision how much  
6 time you spent, correct?

7 A. Correct.

8 Q. Am I understanding correctly that you are  
9 having trouble making a general estimate of how much  
10 time you spent in total working on the case?

11 A. Okay. Give me a minute, let me think.

12 MR. DAVIS: I advise you not to guess.

13 A. Okay.

14 MR. LaFATA: Counsel, that's not a  
15 proper objection.

16 MR. DAVIS: I think it is proper.

17 MR. LaFATA: This isn't an amateur hour  
18 about advising the witness what to answer.

19 BY MR. LaFATA:

20 Q. What's your answer to the question?

21 A. I'll estimate a hundred hours.

22 Q. What would your estimate be, ballpark, how  
23 much time you spent on the Class Certification Report in  
24 this case?

25 A. I'd say about 75 percent of it.

1 Q. So roughly 75 hours?

2 A. Yes.

3 Q. Roughly about how much time do you believe  
4 you spent on the merits report in this case?

5 A. The remainder of the hundred hours but,  
6 again, that's just a rough estimate.

7 Q. Understood. You rely on the actual records  
8 of the billing?

9 A. That's correct.

10 Q. About how much time did you spend preparing  
11 for today's deposition?

12 A. Probably a couple days.

13 Q. When did you start that?

14 A. Oh, I've worked on it off and on for a  
15 couple weeks.

16 Q. All right. Did you meet with the attorneys  
17 to prepare for the deposition today?

18 A. Yes.

19 Q. Who did you meet with?

20 A. Mr. Davis here.

21 Q. Anybody else?

22 A. No.

23 Q. When did you first meet him?

24 A. I'm sorry?

25 Q. When did you first meet to prepare for the

1 deposition today?

2 A. Yesterday.

3 Q. How long did you spend preparing?

4 A. All day.

5 Q. Where did you meet?

6 A. In the offices of IES.

7 Q. What, if any, documents did you review in the  
8 course of preparation for today's deposition?

9 A. I went through the major documents that I  
10 considered important to arrive at my conclusion.

11 Q. In preparing for the deposition today, did  
12 you review any deposition transcripts?

13 A. No.

14 Q. Were you given any budget for your work in  
15 this case?

16 A. No.

17 Q. Were you capped on the number of hours that  
18 you could spend on this case?

19 A. No.

20 MR. DAVIS: You didn't mark his merits  
21 report.

22 MR. LaFATA: I did not.

23 (Exhibit C, Saint-Gobain Performance  
24 Plastics Corp's Notice of Deposition of  
25 Donald I. Siegel, marked for identification,

1                   this date.)

2                   BY MR. LaFATA:

3           Q.       Have you seen this document Exhibit C before?

4           A.       Yes.

5           Q.       When did you first see it?

6           A.       I can't recollect. I think it was sent to  
7 me by e-mail. I don't remember when it was.

8           Q.       For your opinion in this case and on your  
9 report you looked at PFOA transport as the area of the  
10 most contaminated zone east of the Water Street plant,  
11 correct?

12          A.       No, I considered contaminant transport  
13 throughout the area where PFOA was discovered.

14          Q.       Is it your testimony that your opinion for  
15 this case, you did not look at PFOA transport for the  
16 area of the most contaminated zone east of the Water  
17 Street plant?

18          A.       Say that again.

19          Q.       Is it your testimony that for your report in  
20 this case you did not look at the PFOA transport for the  
21 area of the most contaminated zone east of the Water  
22 Street plant?

23          A.       Of course I did. I misunderstood the first  
24 question.

25          Q.       Exhibit B in front of you, your report, would

1     you look at Page 6-2.

2             A.     Mm-hmm.

3             Q.     Do you see the bottom paragraph there, I  
4     model?

5             A.     Yes.

6             Q.     I modeled PFOA transport for the area of the  
7     most contaminated zone east of the Water Street plant  
8     underlain by fractured bedrock, where measured PFOA  
9     concentrations range from 1,000 to 4,000 ppt. Do you  
10    see that?

11            A.     Yeah.

12            Q.     For your opinion in this case you looked  
13    at -- you modeled the PFOA transport for the area in the  
14    most contaminated zone east of the Water Street plant,  
15    correct?

16            A.     Correct.

17            Q.     That's the location where you applied your  
18    method for this case, for this model, correct?

19            A.     I also applied it near the Bennington  
20    landfill.

21            Q.     Mm-hmm. Other than the area of the most  
22    contaminated zone east of the Water Street plant and the  
23    Bennington landfill, did you apply your model in any  
24    location in the Bennington or North Bennington area?

25            A.     No, because those two locations I would view



1 as what are end members of what would expect throughout  
2 the area.

3 Q. You don't refer in your report to "end  
4 members of what you would expect throughout the area,"  
5 do you?

6 A. No, I don't use the word end members.

7 MR. LaFATA: I'd like to mark this as D,  
8 please.

9 (Exhibit D, 8/15/17 map, Vermont Agency  
10 of Natural Resources, marked for  
11 identification, this date.)

12 Q. You have a copy of Exhibit D in front of you.  
13 Do you see it?

14 A. Yes.

15 Q. This is a map of the Bennington/North  
16 Bennington area, correct?

17 A. Correct.

18 Q. Do you see in the bottom left it refers to  
19 Vermont Agency of Natural Resources, August 15th, 2017?

20 A. Correct.

21 Q. Okay. I'm handing you a pen. Would you  
22 please draw on the map an X to the area east of the  
23 Water Street plant where you applied your model?

24 A. (Witness complies.) I put a circle.

25 Q. Okay. And would you put an X or a circle at

1 the place near the Bennington landfill where you also  
2 applied your model?

3 A. In general around here. (Witness complies.)

4 Q. Would you mind handing me my pen and  
5 Exhibit D?

6 A. Certainly.

7 Q. Thank you. What is the area in size that you  
8 use for the model around the area that you circled near  
9 the Water Street plant?

10 A. Well, you misunderstand the model. The  
11 model models a cross-section area of 1 meter squared and  
12 the model is to reflect generically the kind of  
13 conditions you find within those areas. It's not  
14 specific for every point for the area, in those areas  
15 because there is variability in the PFOA concentrations  
16 that are measured in the groundwater. So I didn't model  
17 that area per se. It just is representative for what I  
18 think would be found in that area.

19 Q. And that area you're referring to is the area  
20 you circled near the Water Street plant on Exhibit D?

21 A. There are two areas, one near the Water  
22 Street plant but that also would reflect the kinds of  
23 response I would expect for vertical infiltration of  
24 PFOA, whenever you have higher concentrations in the  
25 heart of the plume, and similarly the other model would

1 be reflective of the general conditions you find  
2 wherever you have thick sand and gravel in the  
3 Walloomsac River.

4 I just put these here as representative  
5 circles, as you asked, of where I applied my approach.

6 Q. All right. I want to get past  
7 representative. I'd like to know exactly where east of  
8 the Water Street plant you applied your analysis, are  
9 you able to tell me?

10 A. There is no specific location. I selected  
11 what I thought were generic conditions that one would  
12 find more or less east of the Water Street plant and  
13 more or less west of the landfill and applied it to that  
14 kind of model. It's the kind of model it was.

15 Q. That's what you did for both of these circled  
16 areas?

17 A. Yeah.

18 Q. Okay. You used a mathematical model to  
19 estimate PFOA transport through the soils in North  
20 Bennington, correct?

21 A. Correct.

22 Q. It's a solute transport model, correct?

23 A. Correct.

24 Q. Your opinions start with the view that PFOA  
25 was transported through the air, correct?

1 A. Correct.

2 Q. And then was deposited on the soil, right?

3 A. Correct.

4 Q. And then you theorize that PFOA traveled down  
5 through the soil and into the groundwater, correct?

6 A. Correct.

7 Q. Okay. Now, you did not model air emissions,  
8 did you?

9 A. No.

10 Q. You rely on the report of Gary Yoder of TRM  
11 for his opinion on air dispersion modeling, correct?

12 A. That and the Vermont air model they had  
13 commissioned to do. They were similar.

14 Q. You have Exhibit A in front of you? Would  
15 you please turn to Page 3? Do you see paragraph 9, this  
16 is --

17 A. Correct.

18 Q. This is your sworn Declaration, correct?

19 A. Hmm, mm.

20 Q. Is that a yes?

21 A. Yes.

22 Q. Paragraph 9 says, "I have reviewed and rely  
23 upon the expert report of Gary Yoder of TRM (2017) which  
24 uses air dispersion modeling to show the likely areas of  
25 deposition of PFOA onto soils in North Bennington and

1 Bennington, based on the air emissions from the two  
2 former ChemFab/Saint-Gobain facilities," correct?

3 A. Correct.

4 Q. You do not refer in this to the Vermont  
5 model, correct?

6 A. Correct.

7 Q. You did not independently replicate Yoder's  
8 air modeling in your report, did you?

9 A. No.

10 Q. You did not independently evaluate the  
11 assumptions of Yoder's air modeling, did you?

12 A. No.

13 Q. You accepted Yoder's air model air emissions  
14 modeling in entirety?

15 A. Well, I did review, look at it and reviewed  
16 it in the context -- I independently looked to see what  
17 the prevailing wind directions would be and so on. I  
18 looked at the topography and looked at the extent to  
19 which the results seemed plausible on the basis of my  
20 general understanding of how fluids would move and be at  
21 the atmosphere and the subsurface.

22 Q. So starting with Yoder's air emissions  
23 opinion, you then estimated the time it would take for  
24 the modeled air emissions to travel from the top of the  
25 soil down to the water underground, correct?

1           A.       I estimated how long or I determined how  
2       long it would take, using the Rao approach to get from  
3       the land surface to the water table.

4           Q.       And then after you did that, you then  
5       estimated the time it would take for the modeled PFOA  
6       aquifers to disperse in the groundwater once down there,  
7       correct?

8           A.       No. The time you -- calculated how long --  
9       the way the approach works, you determine how long it  
10      takes from the land surface to the water table and there  
11      you assume it then mixes with groundwater immediately  
12      beneath it for the thickness of the aquifer but there's  
13      no timing involved within the aquifer itself. This  
14      particular approach, you assume complete mixing.

15          Q.       That complete mixing doesn't have a time,  
16      right, in this approach?

17          A.       Well, the approach, you model it year by  
18      year and so in that sense time is put into it as the  
19      PFOA builds up or then decreases afterwards.

20          Q.       In your opinion you did not drill any wells,  
21      did you?

22          A.       No, I did not drill any wells.

23          Q.       For your opinion you did not do any well  
24      studies yourself?

25          A.       By "well studies," what do you mean?

1 Q. Have you done a well study before?

2 A. What do you mean by "a well study"?

3 Q. Have you ever studied a well before?

4 A. I've looked at logs of wells and  
5 constructions of wells, yeah.

6 Q. In forming your opinion in this case, did you  
7 do any kind of well study?

8 A. Well, I recall I looked at the appendices  
9 and so forth in various reports that showed the  
10 construction of monitoring wells and other wells.

11 Q. Did you physically inspect any wells in  
12 connection with your opinion in this case?

13 A. Physically, no.

14 Q. Did you take any soil samples in connection  
15 with your opinion in this case?

16 A. No.

17 Q. Did you take any groundwater samples?

18 A. No.

19 Q. Did you interview any homeowners?

20 A. No.

21 Q. Did you have any lab tests ordered?

22 A. No.

23 Q. Did you use any tracer analysis?

24 A. No.

25 Q. So we talked a little bit about the transport

1 of PFOA down through the soil. I just want to get some  
2 terms straight for myself.

3 A. Sure.

4 Q. Would you call the top layer topsoil in the  
5 soil? What would you call it?

6 A. Topsoil is fine.

7 Q. Okay.

8 A. A Horizon or O Horizon is what soil  
9 scientists call it but you can call it topsoil.

10 Q. Did you say AAO?

11 A. A, A, the letter A or O.

12 Q. Beneath that there's an unsaturated zone,  
13 correct?

14 A. Correct.

15 Q. Is that called the vadose layer also?

16 A. Fair enough.

17 Q. Is that a yes?

18 A. Yes.

19 Q. Underneath that there's a saturated zone,  
20 correct?

21 A. Correct.

22 Q. Is it also called saturated overburden?

23 A. Well, depending where you are. Can be  
24 saturated overburden or where overburden is very small,  
25 it could be saturated bedrock.



1 Q. Then beneath all of that soil then is the  
2 bedrock, correct?

3 A. Correct.

4 Q. Now, the depth of the unsaturated zone can be  
5 substantially different depending on what location we're  
6 talking about?

7 A. Yes.

8 Q. So can the depth of the saturated zone?

9 A. Correct.

10 Q. So can the depth of bedrock, correct?

11 A. Yes.

12 MR. LaFATA: Can I make this E, please.

13 (Exhibit E, DeSimone, Ph.D., 2017,  
14 Surficial Geologic Map of the Bennington  
15 Area, Vermont, marked for identification,  
16 this date.)

17 Q. Dr. Siegel, I've handed you a copy of  
18 DeSimone 2017. Do you recognize this?

19 A. Absolutely, yes.

20 Q. On the bottom of the first page do you see  
21 the David J. DeSimone, Ph.D. 2017; correct?

22 A. Correct.

23 Q. You relied upon this for your opinion,  
24 correct?

25 A. Yes.

1 Q. Is the first colored page I handed you, this  
2 is a surficial geologic map of the Bennington area,  
3 correct?

4 A. Correct.

5 Q. There are different colored areas throughout  
6 this, correct?

7 A. Correct.

8 Q. Those are indications of some of the  
9 different swale types in the area, correct?

10 A. These are the indication of the different  
11 kind of surficial materials, not soils. This is  
12 material under the soil zone.

13 Q. Okay. That material could be in various  
14 parts of the layers we talked about; is that right?

15 A. Yes.

16 Q. So, for example, on the right-hand side you  
17 see a section Holocene?

18 A. Yes.

19 Q. Okay. In the first one there, HMP says  
20 muck-peat as an example?

21 A. Yes.

22 Q. And then there's a color there and that color  
23 in the map indicates where DeSimone believes there's  
24 that type of material in the area, correct?

25 A. That's correct.

1 Q. Okay. Do you have any reason to doubt the  
2 accuracy of DeSimone's work here?

3 A. No.

4 Q. These different types of materials have  
5 different properties to them, correct?

6 A. Correct.

7 Q. There's a bunch of different materials in the  
8 right-hand column, correct?

9 A. Correct.

10 Q. Would you turn with me to the second plate?  
11 This is Aquifer Recharge Potential is a Function of  
12 Surficial Materials in the Bennington Area, Vermont?

13 A. Right.

14 Q. This is also by DeSimone; correct?

15 A. Correct.

16 Q. What is permeability?

17 A. Permeability is a material property of  
18 porous material that partly governs how fast water can  
19 move through it.

20 Q. Okay. And there's a box in the bottom left  
21 of this plate that refers to recharge potential, right?

22 A. Correct.

23 Q. You have the highest number 1, right?

24 A. Correct.

25 Q. Lowest at number 4, right?

1           A.       Correct.

2           Q.       And with number 1 it refers to areas of high  
3 permeable overburden, right?

4           A.       Correct.

5           Q.       And number 4 for areas of thick impermeable  
6 till, right?

7           A.       Correct.

8           Q.       And these colors there correspond to  
9 different colors in these circles on DeSimone's map,  
10 right?

11          A.       Correct.

12          Q.       There are different levels of permeability  
13 that correspond with these different colors in these  
14 zones, correct?

15          A.       Yes.

16          Q.       Okay. And then the third plate here is --

17          A.       But I would like to comment that these are  
18 very general -- when you map surficial geology like  
19 this, these are broad descriptions, so in some places  
20 within this particular kind of material that might be  
21 described there would be other materials that would have  
22 higher or lower permeability.

23          Q.       Okay. So then, for example, let's just pick  
24 that green area number 2 on the left-hand side. Do you  
25 see that?

1           A.     Yes.

2           Q.     Am I understanding you correctly that even  
3     though you shaded those two, there could actually be a  
4     bunch of variations in that area?

5           A.     Yeah. For example, in the area on the  
6     left -- right-hand side, where you see the Bennington  
7     landfill, it says fill. And this -- the way it's drawn  
8     it appears the fill is right on top of high permeability  
9     material. And that is only partly true. Underneath it,  
10    as I'm sure we'll explore, there is very low  
11    permeability as well.

12          Q.     All right. The third plate here is Surficial  
13    Geology of the Bennington Area of Vermont,  
14    Cross-sections, right?

15          A.     Correct.

16          Q.     Did you use this plate for your analysis in  
17    the case?

18          A.     Yes.

19          Q.     How so?

20          A.     Well, the two cross-sections up on top are  
21    cross-sections that were north and south of the  
22    Bennington landfill and they describe, if you look at  
23    it, a bedrock high that is on the west side of the  
24    landfill. You don't see the landfill on these because  
25    the cross-section didn't go directly through.

1 Q. Where on here does it refer to the location  
2 of the landfill on this plate?

3 A. It doesn't. This would be an extrapolation  
4 from the cross-sections.

5 Q. What is the basis to your extrapolation?

6 A. If you look at the other figure, you see --  
7 you look at the circle surrounding the landfill -- I'm  
8 looking at plate 1, this one here. You see two red  
9 lines, one RL -- my eyes -- GM and the other one below  
10 it H7 -- I can't read the other number there but you can  
11 see two red lines on either side of the landfill, one  
12 going southwest to northeast and one almost going  
13 east-west.

14 Q. Got it.

15 A. Okay. So in one's mind eye could  
16 extrapolate that in between would be something halfway  
17 between what these two look like.

18 Q. Okay. So there's not a cross-section that  
19 goes through the landfill, correct?

20 A. No, not on this document.

21 Q. Did you use a -- for your opinion in this  
22 case did you use a report of the Bennington soil survey?

23 A. Yes.

24 MR. LaFATA: Could you make this F,  
25 please.

1                   (Exhibit F, Soil Survey of Bennington  
2                   County, Vermont, marked for identification,  
3                   this date.)

4           Q.     You've been handed a copy of Exhibit F. This  
5           is a report called Soil Survey of Bennington County,  
6           Vermont, correct?

7           A.     Correct.

8           Q.     It says on the top that it's from the United  
9           States Department of Agriculture, right?

10          A.     Correct.

11          Q.     Is it reasonable to rely upon the work of the  
12          United States Department of Agriculture?

13          A.     Yes.

14          Q.     And to the right it says: In cooperation  
15          with the United States Forest Service. Do you see that?

16          A.     Correct.

17          Q.     Is it reasonable to rely on the work of the  
18          United States Forest Service?

19          A.     Yes.

20          Q.     Do you have any reason to doubt the accuracy  
21          of the soil survey?

22          A.     Within the context of how they do soil  
23          survey, no.

24          Q.     Would you turn with me to Page 307?

25          A.     307 is a blank page saying Tables.

1 Q. That's right. And would you turn with me to  
2 the next page. This is Table 1 Temperature and  
3 Precipitation, right?

4 A. Mm-hmm.

5 Q. This is the data recorded in the period 1961  
6 to 1986 at Dorset, Vermont, right?

7 A. Right.

8 Q. Would you turn to the next page, 309? Do you  
9 see in the upper left it refers to Bennington County,  
10 Vermont, right?

11 A. Correct.

12 Q. And on the next Page 310, Table 4, the  
13 Acreage and Proportionate Extent of the Soils, correct?

14 A. Right.

15 Q. They have different types of soil in this  
16 list, right?

17 A. Correct.

18 Q. It refers to the acreage of each type of  
19 soil?

20 A. Correct.

21 Q. It refers to the percentage of each type of  
22 soil?

23 A. Correct, correct.

24 Q. So just as an example, number 40C refers to  
25 Galway-Nellis-Farmington complex, 8 to 15 percent



1 slopes, rocky; right?

2 A. Yes.

3 Q. On Page 311, the table continues. Do you see  
4 that?

5 A. Yes.

6 Q. In the upper left you see this is for  
7 Bennington County, Vermont, right?

8 A. Correct.

9 Q. The different soil types continue throughout  
10 this Table 4, right?

11 A. Correct.

12 Q. It continues onto Page 312?

13 A. Correct.

14 Q. So there are lots of different soil types  
15 according to this survey for this area, correct?

16 A. Correct.

17 Q. You mentioned earlier in the deposition you  
18 used Rao for your analysis; correct?

19 A. Correct.

20 Q. For your opinion in this case you applied a  
21 screening model, Rao screening model, correct?

22 A. The Rao model was used as a screening  
23 approach to look at the comparative mobility of  
24 pesticides vertically downward through soil to the water  
25 table. So in that sense that's what the screening

1 means, to compare one versus the other, since organic  
2 compounds have different, like -- such as pesticides  
3 have different volatilization and retardation, different  
4 chemical factors that control the transport. So in that  
5 sense that's what it means as a screening approach.

6 Q. Did you apply Rao's method faithfully?

7 A. Faithfully?

8 Q. Yes.

9 A. I believe I did.

10 Q. And in applying Rao, you arrived at a maximum  
11 travel time of PFOA to the underlying water table of  
12 about 10 years, correct?

13 A. Given the assumptions I applied to it.

14 Q. And you describe Rao as a one-dimensional  
15 steady-state screening approach, correct?

16 A. It -- that's correct, screening in the  
17 context of it was designed to look at how different  
18 organic compounds move vertically through the soil.

19 MR. LaFATA: Would you please mark this  
20 as G?

21 (Exhibit G, Proceedings Volume 44, 1985,  
22 Solid and Crop Science, Society of Florida,  
23 marked for identification, this date.)

24 Q. This is the Rao article, correct?

25 A. Correct.

1 Q. And on the cover page, from the Soil and Crop  
2 Science Society of Florida, correct?

3 A. Correct.

4 Q. And it's from the Proceedings, Volume 44,  
5 1985, right?

6 A. Correct.

7 Q. This refers to a proceeding, the 44th Annual  
8 Meeting at the Ramada Resort in Jacksonville Beach,  
9 Florida, right?

10 A. Correct.

11 Q. Would you turn with me to the abstract? Do  
12 you see at the top the title says Indices for Ranking  
13 the Potential for Pesticide Contamination of  
14 Groundwater. Do you see that?

15 A. Correct.

16 Q. And in the third sentence of the abstract  
17 where it refers to "in this paper." Do you see that  
18 sentence?

19 A. Where?

20 Q. In the abstract?

21 A. Abstract? In the paper, yes.

22 Q. "In this paper, several simple indices useful  
23 to screen and to rank pesticides in terms of their  
24 potential to leach past the crop root zone and to  
25 intrude into groundwater are evaluated."

1 A. Correct.

2 Q. Rao used the model to screen pesticides,  
3 correct?

4 A. To screen pesticides and determine which  
5 pesticides would move faster or slower given their  
6 chemical properties.

7 Q. Rao did not apply the method to PFOA,  
8 correct?

9 A. Correct.

10 Q. Rao did not apply the method to APFO?

11 A. Correct.

12 Q. Do you know what APFO is?

13 A. Ammonium PFOA.

14 Q. They're not pesticides, right?

15 A. Correct.

16 Q. The next sentence, it says, "these ranking  
17 schemes are based on the relative travel time needed for  
18 the pesticides to migrate through the vadose zone and on  
19 the relative mass emission from the vadose zone; i.e.,  
20 loading to groundwater." Do you see that?

21 A. Correct.

22 Q. They're referring to the travel through the  
23 vadose zone for this screening, right?

24 A. Correct.

25 Q. Okay. Now, the absorption capacity of the

1 PFOA is far less than pesticides, correct?

2 A. Correct.

3 Q. Now, has -- after publishing this, has Rao or  
4 any of Rao's colleagues applied their screening model to  
5 PFOA?

6 A. I'm not aware of it.

7 Q. What about to APFO?

8 A. I'm not aware of it.

9 Q. Are you aware of any other scientific  
10 investigator who applied Rao's screening method to  
11 transport of PFOA through soil?

12 A. No.

13 Q. What about for APFO?

14 A. No.

15 Q. Have you published any peer-reviewed  
16 publication in which you applied Rao's screening  
17 approach to the transport of PFOA?

18 A. No.

19 Q. Okay. Would you please turn with me to  
20 Page 4?

21 A. Correct, okay.

22 Q. Do you see a section called Comparison of the  
23 Indices for Some Pesticides?

24 A. Yes.

25 Q. Is it typical in a peer-reviewed paper to

1 explain the methods you use to arrive at your  
2 conclusion?

3 A. Yes.

4 Q. Okay. In the second paragraph do you see it  
5 starts with "two soils"?

6 A. Correct.

7 Q. It says "two soils were selected for  
8 computing the indices." Do you see that?

9 A. Yeah.

10 Q. One of the soils was Tavares fine sand. Do  
11 you see that?

12 A. Yes.

13 Q. Did I pronounce that correctly?

14 A. I don't know, try to say the next one.

15 Q. Typic Quartzipsammments, and it says this was  
16 chosen as representative of the well-drained coarse  
17 textured soils of Florida's central ridge. Do you see  
18 that there?

19 A. Yes.

20 Q. And then it says, "while the soil in the  
21 Florida Panhandle was represented by Orangeburg loamy  
22 sand." Do you see that reference?

23 A. Yes.

24 Q. These are the soil types that Rao is using  
25 for the screening, right?

1 A. That's correct.

2 Q. Now, would you please turn to Table 3 on the  
3 next page on the bottom left?

4 A. Mm-hmm.

5 Q. Table 3, excuse me, refers to soil properties  
6 used in ranking the pesticides, right?

7 A. Correct.

8 Q. These are the soils that Rao is describing in  
9 the methodology sections; is that right?

10 A. Just let me find -- I see it, yes.

11 Q. On the bottom?

12 A. Yes.

13 Q. There are various soil properties in that  
14 table?

15 A. Yes.

16 Q. Porosity?

17 A. Yes.

18 Q. Field capacity, right?

19 A. Yes.

20 Q. On the right side there are two columns,  
21 Tavares and Orangeburg?

22 A. Right.

23 Q. Those refer to the soil types?

24 A. Yes.

25 Q. Rao has different properties for each of the

1 soil types, for each of these soil properties, right?

2 A. Yes.

3 Q. Because these properties can vary from soil  
4 to soil, right?

5 A. That's correct.

6 Q. So to apply Rao, you had to input several  
7 variables for your opinion in this case, right?

8 A. Yes.

9 Q. So to apply Rao, you took several variables  
10 and put them in a calculation sheet for your opinion,  
11 correct?

12 A. Correct.

13 (Exhibit H, Rao (1985) Model, Prepared  
14 by D.J. Siegel, marked for identification,  
15 this date.)

16 Q. You have a copy of Exhibit H in front of you?

17 A. Yes.

18 Q. Which is, in the upper left, Rao (1985)  
19 Model, Prepared by D.I. Siegel; right?

20 A. Yes.

21 Q. These are -- down the column, says Rao  
22 Variables. Do you see that?

23 A. Yes.

24 Q. Or variables.

25 A. Oops, should be variables, typo.



1 Q. And then each of these refers to the  
2 variables you used for the Rao analysis?

3 A. Correct.

4 Q. So, for example, BD, that's bulk density?

5 A. Correct.

6 Q. And next is organic content of the soil?

7 A. Correct.

8 Q. Then what is Koc?

9 A. It's the organic partition coefficient.

10 Q. P is the porosity of the soil?

11 A. Yes.

12 Q. Then there's another one -- excuse me, the  
13 next P is porosity of the aquifer?

14 A. Correct.

15 Q. And then porosity of the soil?

16 A. Correct.

17 Q. FC is field capacity?

18 A. Correct.

19 Q. Then it goes on from there.

20 A. Correct.

21 Q. About how many variables are on this?

22 A. I can count them. 13.

23 Q. Okay. So for each of these you chose a  
24 value, right?

25 A. Correct.

1           Q.     You applied these values to the Rao analysis,  
2     right?

3           A.     Correct.

4           Q.     And the values that you selected for that  
5     correspond to the area you circled in Exhibit D next to  
6     the plant, right?

7           A.     They correspond to a one -- 1 meter squared  
8     area that I thought was reasonably reflective within  
9     that area, recognizing around the plant there's quite a  
10    bit of variability.

11          Q.     Okay. Can you identify in this map where the  
12    1 square meter area was you used in your analysis?

13          A.     No, it was a conceptual 1 meter squared  
14    area.

15          Q.     So you did not use, say different Rao  
16    variables for the landfill opinion; correct?

17          A.     I did for the landfill.

18          Q.     Do you disclose those numbers in your report?

19          A.     I thought I did.

20          Q.     Do you have your report in front of you?

21          A.     Yeah.

22          Q.     Exhibit B. Page 4-1 is the Bennington  
23    Landfill and PFOA contamination section, right?

24          A.     Okay.

25          Q.     Is that right, sir?

1           A.       Just a moment.

2           Q.       Sure.

3           A.       Okay. The modeling I did near the landfill  
4 I describe on 6-5. I thought I had -- in fact I'm  
5 almost sure I sent along the spreadsheet that included  
6 those estimates.

7           Q.       Well, at least for Page 6-5, the variables  
8 for the Rao analysis for the landfill were not on  
9 Page 6-5?

10          A.       No, they're not on there.

11          Q.       For Exhibit H, the variables you used, you  
12 don't refer in there to any margin of error for these  
13 values, correct?

14          A.       Correct.

15          Q.       And you did not take any soil or other  
16 samples from the area to attempt to calculate the values  
17 here?

18          A.       No, I did not physically collect any  
19 samples.

20          Q.       Did you take any data from the  
21 Bennington/North Bennington area that you used to  
22 calibrate the variables you selected for the Rao  
23 analysis?

24          A.       No.

25          Q.       What about to validate the utility of these

1 values? Did you take any data from that area to  
2 validate the values you selected?

3 MR. DAVIS: Object to the question as  
4 vague.

5 A. I selected values that I thought were  
6 representative of what would be appropriate for those  
7 kinds of settings.

8 Q. My question was different. Did you take any  
9 data from the Bennington/North Bennington area to  
10 attempt to validate the values you selected for these?

11 MR. DAVIS: Same objection.

12 A. The values I selected would fall within the  
13 range of values that would occur within the kinds of  
14 surficial materials in the North Bennington area.

15 Q. That was not my question. My question is did  
16 you take any data --

17 A. What do you mean "take any data"? Define  
18 that.

19 Q. Did you collect any data from the  
20 Bennington/North Bennington area to attempt to validate  
21 the values you selected for Rao?

22 MR. DAVIS: Same objection.

23 A. Do you mean did I physically go there and  
24 collect samples to validate it?

25 Q. Did you?

1           A.       No.

2           Q.       Did you use any other data for the  
3   Bennington/North Bennington area to validate the values  
4   you selected for Rao?

5           A.       Well, for example I -- for the soil organic  
6   content, you know, I looked at the organic content soil  
7   that Mally (ph) had in his report and then I used that  
8   as a representative indicator of what the total organic  
9   carbon would be. So I guess in that case I used  
10   specific data from the North Bennington studies done.

11                   With respect to the porosity, the values I  
12   use are very typical of the kinds of surficial materials  
13   that are reported.

14           Q.       Did Mally collect any soil from  
15   Bennington/North Bennington?

16           A.       He collected soil around the Water Street  
17   plant.

18           Q.       And who's Mally?

19           A.       Mally was a consultant hired by  
20   Saint-Gobain.

21           Q.       Okay. And when you say that for the porosity  
22   factors you use figures you believe are typical, did you  
23   do attempt to validate the typicality of the figures you  
24   selected?

25                   MR. DAVIS: Same objection.

1           A.     No, because in hydrogeology it's fairly  
2 understood what the range of porosity would be for  
3 different materials.

4           Q.     All right. In your second report, the merits  
5 report, you made some changes to the Rao variables,  
6 correct?

7           A.     I'd have to look at it.

8           Q.     Do you recall whether you made any changes?

9           A.     I may have made changes in what I think are  
10 within the reasonable variability one would find in the  
11 parameters, yeah.

12          Q.     Why did you make those changes?

13          A.     I don't recollect at this time. I think  
14 they -- I thought they might be even more  
15 representative.

16          Q.     More representative than what you put in your  
17 main report, right?

18          A.     Well, there's -- they're both  
19 representative. These are not -- the Rao approach was  
20 devised and promoted to assess the, or determine about  
21 how long it would take for a pesticide or any other  
22 chemical compound -- the math is the math. You don't  
23 use -- you use it for any compound, whether it's  
24 pesticides or not, for the chemical to reach the  
25 groundwater.

1           And within the scope of assessing whether  
2       it's -- whether the PFOA was seen in the groundwater in  
3       the area of interest, could have gotten there through --  
4       from air deposition as opposed to other sources.

5           I think the approach I used was sufficient  
6       to assess that, the plausibility or probability that  
7       it's reasonable, and to that end the numbers I came to  
8       are in agreement with recent work the USGS has done  
9       where they've actually age dated the water east/west  
10      across the area of interest.

11          Q.     Move to strike as nonresponsive. That wasn't  
12      my question. In your second report you issued new  
13      variables using the Rao analysis, correct?

14          A.     Yes.

15          Q.     All right.

16                  MR. DAVIS: If you need to look at your  
17      report, please do. Just a second.

18                  (Exhibit I, IES, Inc. Expert Report on  
19      the Merits, 12/15/17, marked for  
20      identification, this date.)

21          Q.     Okay?

22          A.     Oh, okay.

23          Q.     Would you turn with me to SOQ-2, please?

24          A.     Yes.

25          Q.     Is that your signature on the bottom there?

1 A. Yes.

2 Q. Would you turn for me to Page 3 of 3?

3 A. Yes. Now I remember. What I did, if you  
4 look at this table --

5 Q. There isn't a question pending.

6 A. I'm sorry.

7 Q. Is Table 1 where you put in the new variables  
8 you used for Rao?

9 A. I put in a range of variables I use for Rao.

10 Q. The range, you have a column there for sand  
11 and gravel, correct?

12 A. Correct.

13 Q. You have a column for silty sand, right?

14 A. Right.

15 Q. And the variables sometimes differ for each  
16 of the soil types?

17 A. Correct.

18 Q. Then at the top you have slowest transport,  
19 right?

20 A. Right.

21 Q. The bottom you have fastest transport.

22 A. Correct.

23 Q. You presented a range of quantities for each  
24 soil type from slow to fast, correct?

25 A. Yes.



1 Q. That's because it can vary substantially  
2 depending on the soil type, right?

3 A. It can vary according to the soil type.

4 Q. Porosity can, for example, be different  
5 between sand and gravel and silty sand, correct?

6 A. Correct.

7 Q. The -- you do not state in your report the  
8 basis for the change in the variables you use, do you?

9 A. Well, the purpose -- the two reports are two  
10 different purposes. And so in that sense -- well, no  
11 they're two different purposes, two reports.

12 Q. No, you do not state --

13 A. I do not, no.

14 Q. The first row there, water table maximum, do  
15 you see that?

16 A. Correct.

17 Q. And you say for sand and gravel, 30?

18 A. Yes.

19 Q. And for silty sand, 10?

20 A. Yes.

21 Q. That's for slowest transport, right?

22 A. Yes.

23 Q. You say that's estimated from experience,  
24 right?

25 A. Correct.

1           Q.     What experience are you using for the water  
2     table maximum in this area?

3           A.     This was the water table maximum could be  
4     deeper, could be shallower. It's -- I've worked on sand  
5     and gravel and silty sand settings my entire career and  
6     I just came up with an approximation that I thought was  
7     reasonable, but one could vary these any way you want  
8     within a reasonable range and the results still would  
9     become fairly the same in terms of a relatively short  
10    time for PFOA to reach the water table.

11          Q.     These are the values you're using for the  
12    area you circled east of the Water Street plant,  
13    correct?

14          A.     This is for the Bennington landfill here.

15          Q.     These values are for the landfill for the  
16    area you circled on Exhibit D?

17          A.     Hang on a second. This could apply for  
18    either case, either -- in general across the area of --  
19    that was impacted by PFOA.

20          Q.     These numbers apply across the area --

21          A.     Yeah.

22          Q.     -- in the map in Exhibit D?

23          A.     Correct.

24          Q.     Do you have Rao in front of you still?

25                 MR. DAVIS: Which exhibit?

1           Q.     I'm sorry, sir, one last question on this  
2     Table 1. Do you see there's a row in the bottom, bulk  
3     organic carbon derived from male. Do you see that?

4           A.     Yes.

5           Q.     And there are three values .008, .004, .002;  
6     is that right?

7           A.     Correct.

8           Q.     Which value did you use?

9           A.     It would depend on which assumption or which  
10    value I use for maximum water table depth. If it were  
11    30 feet, I would use the .002 for the bulk TLC for the  
12    soil column. If it were 10 feet, I use .004 and if it  
13    were 5 feet I would use .008.

14          Q.     I see. Were you referring to the feet values  
15    in the column sand and gravel?

16          A.     And silty sand, correct.

17          Q.     You use the same organic content for both  
18    sand and gravel and silty sand?

19          A.     Yes.

20          Q.     Okay. And then you don't report here a  
21    difference between fastest transport and slowest  
22    transport for bulk organic carbon, do you?

23          A.     This is a bulk organic carbon that's found  
24    in the soil, the soil organic compound.

25          Q.     I notice there's an empty row under the

1 slowest transport section and there isn't a number there  
2 for bulk organic carbon for slowest transport. Is  
3 there?

4 A. It doesn't have to be. It applies for the  
5 whole -- for either case.

6 Q. I see you used the same numbers --

7 A. That's correct.

8 Q. I got it. Exhibit G is Rao. Can you please  
9 turn to that?

10 A. Sure.

11 Q. Would you please turn to Page 7.

12 A. Okay.

13 Q. Do you see that Rao refers to Advantages and  
14 Limitations of the Indices?

15 A. Yes.

16 Q. And the first sentence there, "the index AF  
17 we propose here is not designed to be a predictive tool,  
18 but rather a simple method for ranking a number of  
19 pesticides in terms of their relative potential to  
20 intrude into groundwater." Do you see that?

21 A. Yes.

22 Q. Do you agree with that?

23 A. Well, in the context of prediction it  
24 doesn't provide -- no models of any kind can be accurate  
25 predictive tools. I mean, I know Suresh Rao, and I was

1 involved in his assessment of this paper. And so it  
2 does assess -- it can and does assess in a competent way  
3 how long it takes the mass, center of mass of  
4 contamination to reach the water table.

5 And to that end he even goes and says that  
6 you can estimate the concentrations that reaches the  
7 water table or -- concentrations in the aquifer once it  
8 hits equation 13. So it is a simple method to  
9 characterize relative potential to contaminate  
10 groundwater. And to that end I think it's a very good  
11 method.

12 Q. You said you know -- is it Dr. Rao?

13 A. Yeah.

14 Q. Did you talk to Dr. Rao in connection with  
15 this case?

16 A. No.

17 Q. Did you ask Dr. Rao if it's appropriate to  
18 use his model to model the transport of PFOA using this  
19 method?

20 A. No.

21 Q. Do you see the second sentence there, we --  
22 do you see the section Advantages and Limitation?

23 A. Yes.

24 Q. Second sentence?

25 A. Mm-hmm.

1 Q. "We perceive the index to be used by  
2 regulatory agencies in a preliminary evaluation of a  
3 large number of pesticides to select chemicals for  
4 groundwater monitoring programs or to initiate site  
5 specific studies." Do you see that?

6 A. Yes.

7 Q. Do you agree with Rao's statement this is for  
8 a preliminary evaluation?

9 A. No, I think it could be used as a general  
10 tool to assess the plausibility of organic chemicals  
11 getting from the land surface to the groundwater  
12 underneath.

13 Q. You don't agree with Rao's statement here  
14 about the use of his model?

15 A. The use of this -- I agree with his  
16 statement in the context of what the paper was written  
17 for, and this paper was written at a time where science  
18 was trying to determine what way to a priore determine  
19 whether pesticides or other contaminants introduced on  
20 the land surface would get to the groundwater below, and  
21 this approach was viewed not just by me but by a  
22 national academy, in a report that I helped put  
23 together, as an excellent blend between purely  
24 subjective and highly quantitative, that is done without  
25 sufficient information to validate it.

1 Q. Did you have sufficient information in this  
2 case to validate your model?

3 A. I think I certainly have now with the USGS  
4 work.

5 Q. When you issued your report in this case, did  
6 you have sufficient information for your opinion?

7 A. I think so, based on the distribution of  
8 PFOA.

9 Q. Okay. Do you see the next paragraph in the  
10 section, starts with "desirability"?

11 A. Hmm, mm.

12 Q. "The desirability of using readily-available  
13 site and pesticide parameters in developing such an  
14 index necessitated that a number of simplifying  
15 assumptions be made." Do you see that?

16 A. Yes.

17 Q. Do you agree that Rao's framework uses a  
18 number of simplifying assumptions?

19 A. Absolutely.

20 Q. "Vadose zone properties are independent of  
21 depth." Do you see that?

22 A. Yes.

23 Q. That's one of the simplifying assumptions,  
24 right?

25 A. Yes.

1 Q. On the bottom there, do you see under the  
2 paragraph "for a given site"?

3 A. Yes.

4 Q. "For a given site and/or pesticide, one or  
5 more of these assumptions may not be valid." Do you see  
6 that?

7 A. Yes.

8 Q. Do you agree with that?

9 A. Yes.

10 Q. The next sentence: "For example, strong soil  
11 layering and other heterogeneities with depth would  
12 invalidate the first assumption listed above."

13 A. Yes.

14 Q. Do you agree with that?

15 A. Yes.

16 MR. DAVIS: If you get to the point  
17 where it's convenient for a break.

18 MR. LaFATA: Yes, I think we have two  
19 more questions.

20 Q. You do not believe that the water table in  
21 Bennington/North Bennington is the same throughout, do  
22 you?

23 A. What do you mean the "same throughout"?

24 Q. The same depth?

25 A. No.



1 MR. LaFATA: So we can take a break.

2 Let's go off the record.

3 THE VIDEOGRAPHER: Going off the record,  
4 this is the end of media unit number 1. The  
5 time is approximately 9:56 a.m.

6 (A recess was then taken.)

7 THE VIDEOGRAPHER: We are back on the  
8 record. This is the beginning of media unit  
9 number 2. Time is approximately 10:02 a.m.  
10 please proceed.

11 BY MR. LaFATA:

12 Q. Are you ready to continue your deposition,  
13 Dr. Siegel?

14 A. Yes, I am.

15 Q. In your report you refer to a source Bevin  
16 and Germain in 2013. Do you recall that?

17 A. Yes.

18 Q. Do you consider Bevin and Germain be a  
19 reliable source that you used?

20 A. Yes.

21 Q. And you consider it to be an accurate source  
22 that you used?

23 A. I'd have to review the report to see what  
24 you mean by accuracy.

25 Q. Do you have any reason to doubt its accuracy?

1           A.     Well, I have no reason to doubt their  
2 conclusions.

3           Q.     Okay. One of the numbers that you use to  
4 apply the Rao approach was the distribution coefficient  
5 or Kd; correct?

6           A.     Correct.

7           Q.     The distribution coefficient tells you to  
8 what extent PFOA sticks to organic matter in the soil,  
9 right?

10          A.     Correct.

11          Q.     Organic matter can refer to dead plants, for  
12 example?

13          A.     Organic matter usually refers to the  
14 degradation products, plants and organic matter of  
15 what's known as humic materials.

16          Q.     How do you spell it?

17          A.     H-U-M-I-C or H-U-M-U-S depending on --

18          Q.     It's kind of any kind of decaying organic  
19 matter?

20          A.     Correct, that's natural.

21          Q.     The distribution coefficient Kd is important  
22 input in determining how quickly the PFOA can move  
23 through the soil?

24          A.     Correct.

25          Q.     So if the Kd is slow, the substance wouldn't

1 stick as much to soil; is that right?

2 A. Correct.

3 Q. To organic matter in the soil?

4 A. Yeah.

5 Q. If the Kd is high, it would stick more to the  
6 organic matter in the soil?

7 A. Correct.

8 Q. And so KD can be different from soil type to  
9 soil type, correct?

10 A. Correct.

11 Q. You used a Kd of 0.192 in your report,  
12 correct?

13 A. Correct.

14 Q. Do you have Exhibit H?

15 A. Correct.

16 Q. And to arrive at this figure you relied on  
17 article by Shin, correct?

18 A. Milinovic, they measured Kd directly in silty  
19 soils.

20 Q. Did you rely upon Shin in figuring out the Kd  
21 for your report?

22 A. I would have to look at Shin. I believe  
23 Shin did modeling.

24 Q. What in your report do you say you relied on  
25 to calculate Kd?

1           A.       In Kd -- let me look at my report.

2           Q.       On Page 6-3 of your report do you see there's  
3 a paragraph, the second paragraph "I used"?

4           A.       Milinovic and others.

5           Q.       Is it Milinovic?

6           A.       Milinovic.

7           Q.       One of those, okay. So you use Milinovic to  
8 arrive at the Kd value, correct?

9           A.       Correct.

10          Q.       Would you turn with me to your references on  
11 Page 4? Do you see two articles by Shin there, Page 4?

12          A.       Yes.

13          Q.       Do you rely upon Shin in your report for this  
14 case?

15          A.       I relied on Shin only to the extent to see  
16 that -- how they attempted to model the migration of  
17 PFOA from the Washington Works facility using a complex  
18 numerical model.

19          Q.       Is it reasonable for you to rely upon Shin  
20 for that purpose?

21          A.       I think so, yes.

22          Q.       To that extent did you believe that Shin was  
23 accurate on that issue?

24          A.       Oh, Shin didn't -- wasn't able to calibrate  
25 very well in his model nor have others I'm aware of and

1 so I relied on it as an example of how someone could try  
2 to do a deterministic complicated model, but I didn't  
3 rely on any of the values he used in that model.

4 Q. Were you able to calibrate your value for Kd  
5 in this case?

6 A. What do you mean "calibrate"?

7 Q. I'm using the word you used. Were you able  
8 to calibrate the Kd value for this case?

9 A. Okay, calibration in modeling refers to  
10 running a model and seeing if the model results fit the  
11 observations of the parameter you're trying to assess.  
12 In this case using the Kd value I had used, I think I  
13 was able to show that PFOA could have gotten from the  
14 land surface to the groundwater beneath it. So in that  
15 sense, yes, I think it was part of the calibration  
16 process.

17 Q. And calibration refers to the actual  
18 numerical value, correct?

19 A. No, calibration is a comparison of what a  
20 numerical model calculates to physical real observations  
21 that are made in the field.

22 Q. Did you make any physical real observations  
23 in the field for Kd in this case?

24 A. No.

25 Q. I'm going to hand you the next exhibit.

1 (Exhibit J, "Environmental Fate and  
2 Transport Modeling for Perfluorooctanoic acid  
3 Emitted from the Washington Works Facility in  
4 West Virginia", marked for identification,  
5 this date.)

6 Q. Do you see this is Shin 2011? Do you see  
7 that?

8 A. Yes.

9 Q. Okay. Environmental Fate and Transport  
10 Modeling for Perfluorooctanoic Acid Emitted from the  
11 Washington Works Facility in West Virginia. Do you see  
12 that?

13 A. Yes.

14 Q. Turn with me to Page 1439. Do you see  
15 there's a section, Model Optimization Calibration,  
16 right?

17 A. Yes.

18 Q. That's sort of what we were talking about  
19 before, calibration, right?

20 A. Yes.

21 Q. Do you see there's a sentence "instead". Do  
22 you see: "Instead we identified the PFOA soil-water  
23 partition coefficient Kd for a more limited  
24 optimization, as it is an influential and highly  
25 uncertain parameter driving transport times in the

1 vadose zones and groundwater aquifers"?

2 A. I'm sorry, I don't.

3 Q. Do you see the first sentence "because"?

4 A. Yes.

5 Q. The second sentence starts with "instead"?

6 A. Yes.

7 Q. "Instead we identified the PFOA soil-water  
8 partition coefficient Kd for a more limited  
9 optimization, as it is an influential and highly  
10 uncertain parameter driving transport times in the  
11 vadose zone and groundwater aquifers." Do you see that?

12 A. Yes.

13 Q. Do you agree with Shin that Kd is an  
14 influential and highly uncertain parameter?

15 A. Yes.

16 Q. Would you turn with me to the next page,  
17 1440? This is easier. The first paragraph "there are,"  
18 do you see that?

19 A. Yes.

20 Q. "There are dozens of parameters required for  
21 each environmental fate and transport model. The Koc  
22 value is a paramount parameter due to its uncertainty  
23 and influence on the water concentration predictions."  
24 Do you see that?

25 A. Yes.

1 Q. Do you agree that Koc is a paramount  
2 parameter?

3 A. It's an important parameter.

4 Q. Do you agree it is uncertain and can  
5 influence the water concentration predictions?

6 A. Yes.

7 (Exhibit K, "Sorption behaviour of  
8 perfluoroalkyl substances in soils",  
9 Milinovic, marked for identification, this  
10 date.)

11 Q. This is Milinovic, correct?

12 A. Correct.

13 Q. This is what you used to get your Kd value,  
14 correct?

15 A. Correct.

16 Q. Did you use any other sources to get that?

17 A. To obtain the Kd value I used?

18 Q. Yes.

19 A. No, I used Milinovic.

20 Q. Would you please turn with me to Page 64.

21 A. Yes.

22 Q. Okay. Do you see on the right-hand column  
23 there's a section 2.2 Sample --

24 A. Correct.

25 Q. -- Characterization? Do you see the first



1 sentence, "six soil samples with contrasting  
2 characteristics, especially in relation to the organic  
3 matter content, were selected from an already existing  
4 soil collection." Do you see that?

5 A. Yes.

6 Q. So Milinovic used six soil samples?

7 A. Correct.

8 Q. They're listed there with codes, right?

9 A. Yes.

10 Q. Do you see there it says they were natural  
11 and agricultural soils originated from the Iberian  
12 Peninsula? Do you see that?

13 A. Yes.

14 Q. They were collected in a sampling campaign  
15 carried out in a previous work, right?

16 A. Right.

17 Q. There was a sixth soil, DUBLIN?

18 A. Yes.

19 Q. That was a peat soil that originated from a  
20 wet meadow of Belarus?

21 A. Yes.

22 Q. Where is Belarus?

23 A. It's in Russia or it's eastern Europe.

24 Q. And it's not a geography test.

25 A. Yeah.

1 Q. It says the soils correspond at the top  
2 layer, zero to 10-centimeter depth of plain soils,  
3 right?

4 A. Correct.

5 Q. Then it explains how they prepared the soils?

6 A. Yes.

7 Q. Would you please turn to the table 2?

8 A. Mm-hmm.

9 Q. So there are the six soil types on the left  
10 column, right?

11 A. Yes.

12 Q. They have different properties for each soil  
13 type?

14 A. Yes.

15 Q. PH, right?

16 A. Yes.

17 Q. What is CEC?

18 A. Cation exchange capacity.

19 Q. And calcium carbonate?

20 A. Yes.

21 Q. And organic content?

22 A. Yes.

23 Q. And these values are different for each of  
24 the soils, right?

25 A. Correct.

1 Q. Would you turn with me to Table 3 on Page 69.

2 A. Okay.

3 Q. Do you see the middle row there is PFOA?

4 A. Mm-hmm.

5 Q. And they have the six soil types there,  
6 right?

7 A. Mm-hmm.

8 Q. Is that a yes?

9 A. Yes.

10 Q. And they have a column for Experimental Data,  
11 right?

12 A. Correct.

13 Q. They have a Kd minimum and a maximum, right?

14 A. Correct.

15 Q. For each of the soil types, correct?

16 A. Correct.

17 Q. And those are sort of different ranks in  
18 there, right?

19 A. Correct.

20 Q. For instance, one starts at .8 and goes to  
21 4.3, right?

22 A. Where are we now?

23 Q. It's soil, GOLOSO. Do you see that?

24 A. GOLOSO soil, GOLOSO soil. You're looking at  
25 PFOA, yes.

1 Q. It goes from .8 to 4.3?

2 A. Yes.

3 Q. Then the last one, DUBLIN, goes from 25 to  
4 49, right?

5 A. Correct.

6 Q. And then on the far right-hand column there's  
7 a linear calculation for Kd, right?

8 A. Correct.

9 Q. And one of these values in here is .192,  
10 correct?

11 A. Point what?

12 Q. .192?

13 A. 192, no.

14 Q. .192 is actually lower than the values that  
15 are from the experimental data in this paper, correct?

16 A. Correct.

17 Q. You don't state in your report how you  
18 arrived at .192 using these data, do you?

19 A. I used the least squares regression  
20 presented on the upper panel on the upper left-hand  
21 figure 4. No, it's the middle panel, PFOA, Kd is equal  
22 to 96 times the fraction of organic carbon and that's  
23 the equation that I used to determine the KDs for my  
24 modeling effort.

25 Q. So .192 was not experimental data in

1 Milinovic, correct?

2 A. No.

3 Q. It was derived from a regression of the  
4 experimental data?

5 A. Correct.

6 Q. There was not an observed value of .192 from  
7 Milinovic's experiment?

8 A. No.

9 Q. It's on the regression line?

10 A. Correct.

11 Q. So you found .192 on the regression line and  
12 that's how you got your value; is that right?

13 A. Correct. The fraction of organic carbon?

14 Q. Okay. Do you have your second report in  
15 front of you, Exhibit I?

16 MR. DAVIS: It hasn't been marked  
17 actually.

18 MR. LaFATA: I think it was.

19 THE WITNESS: Here it is.

20 Q. Would you turn with me to your Page 3.3?

21 A. Yeah.

22 Q. These are the variables you used for the Rao  
23 analysis for the second report, right?

24 A. Correct.

25 Q. Did you change your Kd variable for this

1 second analysis?

2 A. Kd is a function of the organic matter and so  
3 it's not a single Kd. It's a function of the organic  
4 matter so it had to have changed as I went through it  
5 based on the organic carbon values.

6 Q. Do you report any new value for Kd in this  
7 report here on 3-2 or 3-3?

8 A. No.

9 Q. But you're saying it did change?

10 A. Well, it's -- Kd, if you -- is a function of  
11 the fraction of organic carbon, so if you assume that  
12 the fraction of organic carbon is greater, then the Kd  
13 will be greater.

14 Q. There are computer models that  
15 hydrogeologists use that can measure the transport of  
16 different substances, correct?

17 A. Correct.

18 Q. For example, one that Rao described is  
19 Pesticide Root Zone Model, PRZM?

20 A. Yes.

21 Q. That's one of several sophisticated  
22 simulation models, correct?

23 A. Correct.

24 Q. And that can be used to predict the pesticide  
25 concentration distributions in a soil profile, right?

1           A.     It alleges to be able -- they allege to be  
2     able to predict the pesticide concentrations through a  
3     soil profile.

4           Q.     Do you believe that it can?

5           A.     No.

6           Q.     Why not?

7           A.     Because when I served on the National  
8     Academy of Science Panel on Groundwater Vulnerability we  
9     assessed the validity of the variety of modeling  
10    approaches in order to assess how quickly and --  
11    concentrations of pesticide can move from soils and in  
12    that process, we discovered that those models that  
13    purported to be better actually did no better than Rao's  
14    own model, and so we came to the conclusion that they're  
15    no better and ostensibly worse. I mean, some of the  
16    papers we reviewed were terrible fits.

17          Q.     You published on the use of another modeling  
18    tool, MODFLOW, right?

19          A.     I published papers wherein I've used  
20    MODFLOW.

21          Q.     MODFLOW is what you used to make a  
22    groundwater flow model, correct?

23          A.     I have in the past, in doing research, used  
24    MODFLOW to do groundwater flow models and other  
25    deterministic models.

1 Q. MODFLOW is a well-established US Geologic  
2 Survey computer code, correct?

3 A. Correct.

4 Q. And it solves the groundwater flow equation,  
5 correct?

6 A. Correct.

7 Q. What is the US Geological Survey?

8 A. The U.S. Geologic Survey is the arm of the  
9 department of interior and its -- its purpose varies  
10 depending on the politics but they used to have a water  
11 resources division that developed most of the tools or  
12 many of the tools that are used by hydrogeologists to  
13 assess groundwater fate transport.

14 Q. Is the U.S. Geologic Survey a reliable source  
15 of information on geology?

16 A. Absolutely.

17 Q. Do you agree that U.S. Geologic Survey  
18 publications are reliable sources to you?

19 A. Yes.

20 (Exhibit L, USGS Groundwater  
21 Information, MODFLOW and Related Programs,  
22 marked for identification, this date.)

23 Q. Dr. Siegel, you have a copy of Exhibit L in  
24 front of you?

25 A. Yes, I do.



1 Q. This is -- the bottom left you see it's from  
2 the USGS.gov website?

3 A. Yes.

4 Q. USGS refers to the U.S. Geologic Survey,  
5 right?

6 A. Correct.

7 Q. You see it refers to your MODFLOW and related  
8 programs?

9 A. Correct.

10 Q. You see at the top "MODFLOW is the USGS's  
11 modular hydrologic model"?

12 A. Hydrologic model.

13 Q. Do you see that there?

14 A. Yes.

15 Q. And "MODFLOW is considered an international  
16 standard for simulating and predicting groundwater  
17 conditions and groundwater/surface-water interactions."  
18 Do you see that?

19 A. Yes.

20 Q. Do you agree with that?

21 A. When used properly, yes.

22 Q. You did not use MODFLOW for this case, right?

23 A. No.

24 Q. You state in your report that the majority of  
25 the domestic water wells in Bennington/North Bennington

1 draw water from the fractured bedrock aquifer?

2 A. Yes.

3 Q. And there are other wells that can draw from  
4 the sand and gravel aquifer?

5 A. Yes.

6 Q. Different wells can draw from different  
7 depths, right?

8 A. Yes.

9 Q. Different wells at the same depth may draw  
10 from substantially different sources of water; right?

11 A. Yes.

12 Q. That water can come from different  
13 underground sources, correct?

14 A. Well, yes.

15 MR. DAVIS: Do you need to explain?

16 THE WITNESS: Yeah, I need a little  
17 fuller explanation.

18 A. When you're dealing with fractured rock,  
19 flow to well bores can come from different sets of  
20 fractures and so in that sense, yes.

21 Q. Fractures are cracks in the bedrock?

22 A. Yes.

23 Q. And water can flow through the cracks in the  
24 bedrock?

25 A. Yes.

1 Q. And the -- an area that contributes to a  
2 water well can, through those fractures, be distant from  
3 the wellhead, correct?

4 A. Yes.

5 Q. So the differences in the water that a well  
6 draws from can be due to a variety of factors, right?

7 A. Yes.

8 Q. One of them are the fractures we talked  
9 about?

10 A. Yes.

11 Q. Does groundwater ever flow counter to  
12 topological surface features?

13 A. By "counter," what do you mean?

14 Q. Run against topological surface features?

15 A. You mean topographic?

16 Q. Yes, topographic.

17 A. Well, groundwater always flows down the  
18 hydraulic gradient from high hydraulic head to low  
19 hydraulic head and in settings where you have more  
20 precipitation than evapotranspiration, such as the  
21 northeast, groundwater flow usually follows the  
22 topography and that's a general assumption that's  
23 broadly used.

24 Q. You say --

25 A. It doesn't go uphill.

1           Q.     I didn't mean to interrupt. When you say  
2     "usually," are there circumstances where it may go  
3     counter to those features?

4           A.     That's true. In wetland areas and in  
5     streams that by definition are in valleys, sometimes,  
6     depending on the soil type, groundwater can go into one  
7     side of the stream and then the stream can feed  
8     groundwater and go through it to the other side.

9                     (Exhibit M, "Hydrogeology of the  
10            Bennington and Shaftsbury Area, Vermont",  
11            June, 1991 Jerris/DeSimone, marked for  
12            identification, this date.)

13          Q.     You have a copy of Exhibit M in front of you?

14          A.     Yes.

15          Q.     This is Jerris/DeSimone, correct?

16          A.     Yes.

17          Q.     This is the reference you relied on for your  
18     analysis here, right?

19          A.     It's one of the references.

20          Q.     You believe that Jerris and DeSimone's work  
21     is accurate; right?

22          A.     Well, it's accurate at the time it was made.  
23     DeSimone has produced other data, as you've presented  
24     before, the maps, and of course the Department of -- the  
25     Geological Survey of Vermont has come up with subsequent

1 interpretations, too.

2 Q. Were you reasonable to rely upon this paper  
3 from Jerris and DeSimone?

4 A. Say that again?

5 Q. Were you reasonable when you relied on this  
6 paper from Jerris and DeSimone?

7 A. Was I reasonable?

8 Q. Yes.

9 A. I think it's reasonable to use this in  
10 combination with the other information I have.

11 Q. Is that a yes to my question; it is  
12 reasonable that you used this?

13 MR. DAVIS: Objection --

14 A. I think so.

15 MR. DAVIS: -- to the question,  
16 argumentative.

17 Q. Would you turn to Page 44?

18 MR. DAVIS: Would you say that again,  
19 please?

20 MR. LaFATA: 44.

21 THE WITNESS: Okay.

22 Q. You see there's at the top The Bedrock  
23 Aquifer?

24 A. Yes, I do.

25 Q. You see the first sentence says

1 "approximately 73 percent of the wells in the Bennington  
2 and Shaftsbury area tap water resources in bedrock"?

3 A. Yes.

4 Q. The next sentence, "depending upon the  
5 location of the well, this bedrock may be schist,  
6 phyllite, limestone, marble, quartzite or granite." Did  
7 I read that correct, that section?

8 A. Phyllite.

9 Q. Phyllite, thank you.

10 MR. DAVIS: Make sure you spell schist  
11 right.

12 Q. Would you agree the bedrock in Bennington is  
13 not comprised of the same kind of rock?

14 A. Yes.

15 Q. Would you agree that a well would have  
16 different water yields depending upon whether it was  
17 drilled into any of these different types of bedrock?

18 A. Well, the water yield from the bedrock is a  
19 function of the fracture permeability or fracture  
20 hydraulic conductivity, and to that extent depending on  
21 where you drill, you may have more or less fractures.

22 Q. The permeability of these type of rock are  
23 different from one another?

24 A. Well, the perm -- well, yes, they would be  
25 different from each other but depending on the nature of

1 the fractures that are present, that largely dictates  
2 the permeability for these rock types.

3 Q. Would you turn to Page 67, please? Do you  
4 see Table 5?

5 A. Yes.

6 Q. Bedrock geological emits in the  
7 Bennington/Shafsbury area?

8 A. Yes.

9 Q. There's a column on the left-hand side for  
10 Rock Type, right?

11 A. Yes.

12 Q. There's a column on the right-hand side for  
13 Permeability and Water Yield, correct?

14 A. Correct.

15 Q. For instance, how do you say that?

16 A. Gneiss, G-N-E-I-S-S.

17 Q. I before E.

18 A. Yes, gneiss, like it's nice, a nice gneiss.

19 Q. And the permeability for gneiss is moderate  
20 permeability and yield, correct?

21 A. Correct, in a qualitative sense.

22 Q. And the second one there is marble?

23 A. Yes.

24 Q. And the permeability for that is high, right?

25 A. Along fracture zones and solutional

1 cavities.

2 Q. Especially along fracture zones, correct?

3 A. Any of these could have a higher  
4 permeability where you have fracture zones.

5 Q. Permeability can change depending on the  
6 fracture area, right?

7 A. Correct.

8 Q. Changes in pressure within the fracture  
9 system can also affect the flow of the water, correct?

10 A. Changes in the hydraulic head, which is a --  
11 of which pressure is a part, can affect the rate at  
12 which water moves through the rock.

13 Q. And changes in the pressure, the way the  
14 water moves in the rock can be affected by a variety of  
15 different sources of pressure, right?

16 A. Well, pressure is not the right word for  
17 this. We're looking -- what drives water is the  
18 potential energy the water has and the flow is perfectly  
19 horizontal, then you can use pressure as a surrogate for  
20 that. If not, you have to use a combination of pressure  
21 and elevation. I don't quite understand different  
22 pressures. I mean groundwater moves from high hydraulic  
23 head to low hydraulic head.

24 Q. Let me ask it this way. Can water pumping  
25 out of a well affect the pressure around the well?



1           A.     Oh, yes.

2           Q.     And say, if there's a public water pump  
3     that's pumping a lot of water, that could have an  
4     effect, on the pressure of the water flow near that  
5     well?

6           A.     That's correct.

7           Q.     Can recharge also affect the pressure  
8     underground for around that well as well?

9           A.     Well, if a water well is pumping, it can  
10    induce recharge through pumping to the well.

11          Q.     Would that come from water around the well?

12          A.     It depends on the kind of aquifer. If it's  
13    a water table aquifer, which is known as an unconfined  
14    aquifer where there's no seal on the top, it's drawing  
15    water from near the well. If it's a confined aquifer  
16    where there is a low permeability unit on top of it  
17    dropping the hydraulic head around the well will pull --  
18    could pull water from further places away.

19          Q.     So somewhat depends on the kind of well we're  
20    talking about.

21          A.     It depends on the well and depends on the  
22    hydrologic conditions associated with it.

23          Q.     What is an example of a hydrologic condition  
24    that might affect this?

25          A.     Well, in the case -- as I said, if you have

1 a confined aquifer, for example, under the Bennington  
2 landfill, the bedrock there is confined. It's overlain  
3 by tight sediments, sediments, dry sediments. So that  
4 would be a case where a pumping well near it would --  
5 could draw from different places.

6 If you are on a fracture system, a big  
7 fracture system, a pumping well could draw from deep  
8 fractures. Commonly in bedrock wells, individual  
9 fractures can be viewed as confined, you know, and  
10 others close to the surface less, so it really depends  
11 on the area you're looking at.

12 Q. All right. Now, after you applied Rao, you  
13 then used certain differential equations governing the  
14 mixture of waters; correct?

15 A. Correct.

16 Q. This is a way to address sort of what  
17 happens, in your view, when the PFOA gets down to the  
18 water table, how it mixes; right?

19 A. The intent of those differential equations  
20 is to broadly determine how concentrations of PFOA in an  
21 aquifer will rise with the addition of the annual  
22 delivery of PFOA once it gets to there, the aquifer to  
23 begin with, and see how high it can get, and then once  
24 PFOA no longer is delivered to the surface and clean  
25 recharge eventually gets in, how long it would take for

1 the PFOA to approximately dissipate.

2 Q. You mentioned "recharge." What is recharge  
3 rate?

4 A. It's on the order of about 20 inches a year.

5 Q. I meant what is it generally? What is a  
6 recharge rate? What does that term refer to?

7 A. Recharge refers to that percentage of  
8 precipitation that doesn't run off of a land surface to  
9 get into streams in direct run-off or be consumed or  
10 evaporated. It's what remains that percolates through  
11 the soils to ultimately replenish groundwater.

12 Q. What are some factors that can affect the  
13 recharge rate?

14 A. The permeability of the soils, how much  
15 soil -- moisture the soils have prior to a rain event,  
16 whether the soils are frozen, for example, during  
17 winter.

18 Q. And can the re --

19 A. And also preferential flow paths such as  
20 roots, partings, cracks, particularly in hillside  
21 slopes, that will funnel recharge into some places, less  
22 so than in others.

23 Q. Some of those factors can be a localized  
24 recharge effect, right?

25 A. Yes.

1           Q.     And the recharge rate can change over time,  
2     correct?

3           A.     Yes.

4           Q.     You mentioned 25 inches per year is the  
5     recharge rate used here?

6           A.     Yes.

7           Q.     What was the basis for that?

8           A.     There were a number of reports that I read  
9     that had -- I'd have to go back and look here, that  
10    would indicate what the -- Jerris and DeSimone, Flynn  
11    and Decaster (ph) are two of them that -- so I just  
12    chose 25 as a representative but it varies a few inches  
13    on either side.

14          Q.     By how much?

15          A.     I would have to go back to all the reports  
16    and see but my guess is probably about 10 percent or so  
17    of it. I recall reading 19 in one case and 28 in  
18    another.

19          Q.     So it can have a significant range over time?

20          A.     I don't think it's significant. It's a  
21    small -- this is an annual recharge rate. They seem to  
22    be pretty -- the values I saw were pretty consistent.

23          Q.     Do you agree that an accurate analysis of the  
24    mixing of water should account for the porosity of the  
25    bedrock?

1           A.     We have to -- yes, yes.

2           Q.     And for the differential equations you used,  
3     you relied on a Harte 1988, correct?

4           A.     No, I derived the solution myself after I  
5     went to a differential equation book but Harte also had  
6     it in his.

7           Q.     Where in your report do you refer to the  
8     differential equations that you used?

9           A.     I believe I --

10          Q.     Is it Page 6-3?

11          A.     Yeah, differential equation book standard  
12     text, Boyce and DiPrima; it was cited in Harte.

13          Q.     Did you rely upon Harte for your analysis?

14          A.     I looked at it.

15          Q.     Did you use it for this case?

16          A.     I looked at Boyce and DiPrima, saw their --  
17     their derivation and I applied the boundary conditions  
18     to it myself and then I checked on Harte and it looked  
19     similar, the same.

20          Q.     Okay. This is a simple model, correct?

21          A.     Correct.

22          Q.     It's sort of a back-of-the-envelope style of  
23     approximation, correct?

24          A.     Yes.

25          Q.     Have you published any peer-reviewed

1 materials which you used in these differential equations  
2 in the mixing of the solute groundwater at any other  
3 site?

4 A. I've used similar equations. There's  
5 nothing magic about the equations. They're standard  
6 equations of solute transport. Another time I used one  
7 that was called Ogata-Banks for one-dimensional  
8 transport in a nature paper I wrote.

9 Q. Let me ask you this. Have you ever published  
10 any peer-reviewed materials in which you used the  
11 differential equations from Harte to predict the mixing  
12 of solute in groundwater at another site?

13 A. No.

14 Q. Have you seen any other scientific  
15 investigator who published a peer-reviewed work who used  
16 the Harte equations to predict the concentrations of the  
17 solute in groundwater at a particular site?

18 A. No.

19 Q. The Harte technique assumes an instantaneous  
20 mixing of waters, correct?

21 A. Correct.

22 Q. Assumes a steady recharge rate, correct?

23 A. Correct.

24 Q. There are several variables you put into the  
25 analysis, correct?

1 A. Correct.

2 Q. For example, one is the time for PFOA to  
3 reach the water?

4 A. Correct.

5 Q. One is the mass of PFOA in the aquifer prior  
6 to dilution?

7 A. Correct.

8 Q. One is the volume of the water in the  
9 aquifer?

10 A. Correct.

11 Q. One is the volume of recharge per year,  
12 correct?

13 A. Correct.

14 Q. And you use the mass of PFOA in the aquifer  
15 just before the recharge?

16 A. Correct.

17 Q. The volume of recharge per year, I already  
18 asked that. Withdrawn.

19 Did you perform any sensitivity analysis for  
20 the variables you chose for these?

21 A. I think I may have varied them more or less  
22 in one direction or the other but none of them changed  
23 the results.

24 Q. Let me ask it this way. In your report you  
25 do not -- you do not refer to a sensitivity analysis

1 performed --

2 A. No, I do not in my report.

3 (Exhibit N, Modeling PFOA Buildup,  
4 chart, marked for identification, this date.)

5 Q. This is Exhibit N. Do you see that?

6 A. Yes.

7 Q. And this is the -- this is sort of the sheet  
8 used to make your calculations, correct?

9 A. Correct.

10 Q. And some of the variables we talked about are  
11 across the top of this chart, correct?

12 A. Correct.

13 Q. For instance, volume of groundwater is the  
14 third column.

15 A. Correct.

16 Q. Do you see that? The columns to arrive at  
17 that are recharge?

18 A. Correct.

19 Q. And Q -- what does QL refer to?

20 A. It's a length term.

21 Q. What is the length QL?

22 A. Just a moment. L is liters.

23 Q. So that's a volume?

24 A. Volume, that's correct.

25 Q. You use the same recharge rate in all these



1 rows, right?

2 A. That's correct.

3 Q. This is the -- these are the figures,  
4 calculations you did for that 1 square meter area we  
5 talked about earlier, right?

6 A. That's correct.

7 Q. Now, in that 1 square meter, is -- it's a  
8 theoretical location, correct?

9 A. I would call it a representative rather than  
10 theoretical. Representative area through which water  
11 would move vertically downward.

12 Q. If I get in my car and want to drive to this  
13 representative area, where do I go?

14 A. Well, it would be the general area east of  
15 the Water Street plant but it's not a specific location.  
16 I chose not to -- since there is variability there, I  
17 just chose to come up with what I thought was a  
18 reasonable -- reasonable value to see the plausibility  
19 that PFOA could get to the groundwater through  
20 infiltration.

21 So there are parts of the area where there's  
22 practically no drift at all on top of bedrock fractures  
23 so it could instantly get back and other places, to my  
24 recollection, based on the wells, domestic wells and how  
25 deep they were and the records from their logs, there

1 was -- I can't recall but 10 feet or more of drift so  
2 I -- instead of going to each site, I thought this was  
3 reasonable.

4 Q. So if I were to get in my car and drive to  
5 the Water Street area, there is not a particular  
6 location on the ground that's 1 square meter where you  
7 could point and say that's the area I did my analysis?

8 A. No.

9 Q. Correct?

10 A. No.

11 MR. DAVIS: Can we consider a break  
12 whenever it's a convenient time.

13 MR. LaFATA: We can consider a break.  
14 I'm just about --

15 BY MR. LaFATA:

16 Q. When you perform the calculation, you assumed  
17 the fractured rock aquifer was 300 feet thick, correct?

18 A. Correct.

19 Q. And it had a porosity of 0.03, correct?

20 A. Correct.

21 Q. So if it were more than 300 feet thick, how  
22 would that affect your opinion?

23 A. If it were more than 300 feet thick, since  
24 most of these equations are linear, there would be a  
25 larger amount of groundwater in it and the

1 concentrations would be less.

2 Q. If the porosity were higher, how would that  
3 affect your opinion?

4 A. The same would apply, the concentrations  
5 would be less.

6 Q. Okay. Your calculations here take a 300 --  
7 withdrawn.

8 Do you account for the effects of well  
9 pumping on the mixing of waters in your calculation?

10 A. Only to the extent that I think the  
11 assumption of a well mixed well bore could be obtained  
12 by the pumping itself but I did not take into account a  
13 drawdown that would occur when domestic wells were  
14 pumping.

15 Q. It did not account for the effects of surface  
16 waters, correct?

17 A. Surface waters in what context?

18 Q. Let me ask this. When you ran your model  
19 initially for -- you used emission rates of 1,000 and  
20 10,000 pounds per year of PFOA, correct?

21 A. Right.

22 Q. And that you believed the model predicts  
23 1,000 pounds, correct?

24 A. The model was consistent. I obtained  
25 results that were reasonable in comparing to

1 observations in the order of thousands of parts per  
2 billion PFOA when I used a deposition rate of PFOA that  
3 was derived from air mod models that used 1,000 pounds  
4 of release per year from the Water Street plant.

5 Q. When you ran the model initially for emission  
6 rates of 1,000 pounds per year and 10,000 pounds per  
7 year, correct?

8 A. Right.

9 Q. You found it was consistent with 1,000 pounds  
10 per year?

11 A. It was closer than 1,000 pounds than 10,000  
12 pounds.

13 Q. It was not consistent with 10,000 pounds?

14 A. Yes.

15 Q. It was not consistent with 5,000 pounds?

16 A. It was -- no.

17 MR. LaFATA: We can go off the record.

18 THE VIDEOGRAPHER: We are going off the  
19 record. The time is approximately 10:48 a.m.

20 (A recess was then taken.)

21 THE VIDEOGRAPHER: Going back on the  
22 record, the time is approximately 10:55 a.m.

23 BY MR. LaFATA:

24 Q. Are you ready to continue with the  
25 deposition?

1 A. Yes.

2 Q. Would you look at Exhibit K, the Milinovic  
3 paper, please?

4 A. Here.

5 Q. Is that K?

6 A. That's K.

7 MR. DAVIS: I missed that.

8 MR. LaFATA: No problem.

9 Q. On Page 64, next page. One page over.

10 A. Got it.

11 Q. Do you see it starts, the paragraph number 1  
12 starts with "data"?

13 A. Yes.

14 Q. Okay. Do you see in the middle of that  
15 paragraph on the right there's a sentence that starts  
16 with "whereas"?

17 A. Yes.

18 Q. You see it says, "Whereas, some studies have  
19 reported sorption parameters such as the solid-liquid  
20 distribution coefficient Kd of PFOS and PFOA in  
21 sediments, as appear in the review," and a name there?

22 A. Yes.

23 Q. "To date, only limited data are available for  
24 sorption experiments carried out in mineral soils and  
25 pure phases of soils," and Johnson is cited. Do you see

1 that?

2 A. Yes.

3 Q. In these studies Kd values vary by up to two  
4 orders of magnitude. Do you see that?

5 A. Yes.

6 Q. That's a wide variability?

7 A. Yes.

8 Q. This suggests that various factors influence  
9 the sorption pattern of PFASs in soils and the most  
10 important seems to be soil organic carbon. Do you see  
11 that?

12 A. Yes.

13 Q. Do you agree with that?

14 A. Yes.

15 Q. With respect to your mixing of waters  
16 opinion, we talked about a prediction you make of 1,000  
17 nanograms per liter of PFOA, correct? Do you recall  
18 that?

19 A. Well, in the order of 1,000, not exactly  
20 1,000, order of, depending on the thickness, 300 --  
21 depends -- yeah, in the order of thousands.

22 Q. "On the order of," so could vary by an order  
23 of magnitude of 1,000?

24 A. No, not by an order of magnitude. By  
25 several factors.

1 Q. You don't have the precise estimate, right?

2 It's an estimate?

3 A. Yes.

4 Q. Nanograms per liter is parts per trillion,  
5 correct?

6 A. Correct.

7 Q. You don't state a margin of error for this  
8 prediction, do you?

9 A. No.

10 Q. And your model does not predict the  
11 concentration of PFOA at the house of a particular  
12 property, correct?

13 A. That's correct.

14 Q. So, for instance, it couldn't say what the  
15 PFOA concentration might be in the water of a person's  
16 house on SOA, for instance?

17 A. No, but you also have to understand, the  
18 purpose of the -- I'm not basing my opinions solely on  
19 this exercise. You know, my opinions on the source of  
20 the PFOA comes from the data that I see on the ground --  
21 the distribution of it in groundwater.

22 There's no question but it got to  
23 groundwater because we measure it in groundwater and the  
24 only purpose of these calculations, which I think are  
25 appropriate in the context of the problem, is to just

1 get a sense for how long it would have taken the PFOA to  
2 reach the groundwater from the land surface, and I just  
3 want to make that clear.

4 You know, the -- one could vary these  
5 parameters by a reasonable amount and I think the  
6 results would be essentially confirmatory. It's not --  
7 it's just -- the line of questions suggest to me you  
8 think my opinion is largely based on the model. The  
9 model supports what I see in the observations and what  
10 subsequently I've learned in terms of how old the water  
11 is that's contaminated.

12 MR. LaFATA: Move to strike everything  
13 after "no."

14 Q. On Page 6-5 of your report, do you see that  
15 in front of you, Exhibit B? It's like whack-a-mole the  
16 exhibits, right? You see Page 6-5?

17 A. Yes.

18 Q. And in the middle there do you see there's a  
19 sentence on the far right that starts with "my"?

20 A. 6-5?

21 Q. Yes.

22 A. Where?

23 Q. In the middle on the far right there's a  
24 sentence that starts with "my".

25 A. Got it.



1           Q.     "My calculations predicted groundwater  
2     concentrations of about 24 nanograms per liter if 1,000  
3     pounds of PFOA were released by Saint-Gobain on an  
4     annual basis." Do you see that?

5           A.     Yes.

6           Q.     Your prediction for the groundwater  
7     concentration at the landfill is 24-nanograms per liter,  
8     right?

9           A.     My calculations predicted about 24-nanograms  
10    per liter in the sand and gravel deposits southwest of  
11    the landfill.

12          Q.     Did you do any testing to see if that  
13    prediction was correct?

14          A.     I looked at the maps produced by Vermont DEC  
15    and saw that concentrations of course were variable.  
16    24-nanograms per liter was within a factor or several  
17    factors of what was observed.

18          Q.     So your prediction near the old facility is  
19    around 1,000. Your prediction around the landfill is  
20    around 24, correct?

21          A.     Around the -- east of the Water Street  
22    plant, my calculations agreed with or came to on the  
23    order of 1,000 nanograms per liter more or less, and  
24    then near the landfill, around 24-nanograms per liter,  
25    more or less. It's that order of magnitude.

1 Q. You don't identify an error rate for that  
2 prediction, correct?

3 A. No, there's no -- I do not.

4 Q. If we start around the Northside Drive area  
5 and we were to look at groundwater tests for PFOA around  
6 the area, there have been a variety of tests that have  
7 been done of the groundwater?

8 A. Yes.

9 Q. And, for instance, have you been to the North  
10 Bennington area that you circled on the map?

11 A. Yes.

12 Q. And when were you there?

13 A. Oh, I think it was last May.

14 Q. Why were you there?

15 A. I went to -- I'd have to -- I'd have to  
16 check my notes to see exactly when I was there. I --  
17 Mr. Hinchey and I went to visit with our attorneys and  
18 before we did and before we got into the project in  
19 earnest, Ed and I traveled around and looked at the  
20 various sites to get a feel for it.

21 Q. You took notes recording what you looked at  
22 on those sites?

23 A. I didn't take any notes. I just observed  
24 and keep it in my head. I can't write worth a dam  
25 anymore and even if I had, I -- even I can't read them.

1 Q. Did you go to the old facility in North  
2 Bennington?

3 A. We drove by where it was but we didn't spend  
4 any time there. We went in the Water Street area.

5 Q. Did you stop at the old facility in North  
6 Bennington?

7 A. No.

8 Q. Just drove by it?

9 A. Yeah.

10 Q. You stopped at the facility at Water Street?

11 A. Yes.

12 Q. What did you do there?

13 A. Well, it's open to the public. Just walked  
14 around, saw the dam, looked at where the houses were.  
15 We drove some of the streets.

16 Q. It's in the same trip?

17 A. Same trip, yeah.

18 Q. So a groundwater test in a well by the -- in  
19 the facility at North Bennington, there have been a  
20 variety of those tests that have been done, correct?

21 A. Correct.

22 Q. And you say a test result of 82 would not be  
23 consistent with 1,000 parts per trillion, correct? If  
24 we had a test result of 82, that would not be consistent  
25 with 1,000 parts per trillion, right?

1           A.       No.

2           Q.       If we had a nondetect, that would not be  
3 consistent with 1,000 parts per trillion, correct?

4           A.       That's true. But of course the intent of my  
5 model was not to evaluate individual homes or even the  
6 variability in that context. My model was designed to  
7 see is it plausible to get on the order of 1,000  
8 nanograms per liter in groundwater given the deposition  
9 rates, and what I think are very reasonable assumptions  
10 on parameters.

11                   The intent was not to address the  
12 variability, of which we know there is variability  
13 across the site but in broad terms, in my opinion, it's  
14 very clear we see a clear plume shape that would be  
15 consistent with the Saint-Gobain source.

16           Q.       So if we had that 1,000, the model is trying  
17 to see if the variables can be fit to that 1,000, right?

18           A.       The way I model is to apply what I think are  
19 reasonable variables and see if the observations that we  
20 see agree with it. I don't spend much time tinkering  
21 with the variables in order to get a fit.

22           Q.       Okay. So that if we had -- hypothetically,  
23 if we had several houses in a row that have different  
24 concentrations of PFOA test in their water, say from  
25 nondetect to 50, then they would be different. The

1 model really is not designed to account for those  
2 differences, correct?

3 A. Well, it could if one wanted to address the  
4 individual differences on a more site specific basis in  
5 order to see, you know, why there might be differences.

6 Q. You do that analysis for each location?

7 A. One would have to.

8 Q. Okay. You didn't do that in this case,  
9 right?

10 A. No, and there are other factors that control  
11 concentrations that wouldn't -- that can't be captured  
12 by any of the modeling approaches used at this site and  
13 so -- but in a broad sense, I think this model is  
14 sufficient.

15 Q. What, if anything, did you do to update your  
16 model to take account of the inconsistent data from PFOA  
17 well tests in the area?

18 A. What do you mean, "inconsistent data"?

19 Q. I mean -- we just had a conversation about  
20 well tests that would be different from 1,000, like say  
21 50 or nondetect. What, if anything, did you do to take  
22 account of the inconsistent data that's observable?

23 A. I didn't -- as I said before, the approach I  
24 used was to generically determine if you could get --  
25 well, we know there's 1,000 nanograms per liter in the

1 heart of the plume, so there's no question about it, and  
2 I wanted to see approximately how long could you get  
3 that with using reasonable parameters.

4 But I did not go, say, in the Water Street  
5 area and go house by house trying to figure out why  
6 there are differences. That's still an uncertainty.

7 (Exhibit O, diagram, marked for  
8 identification, this date.)

9 Q. Dr. Siegel, I handed you a diagram, Exhibit  
10 O. Do you see that in front of you?

11 A. Yes.

12 Q. So I -- let's suppose that this is a room  
13 that you want to carpet, okay?

14 A. Mm-hmm.

15 Q. And the room here is 5 by 5 meters, let's  
16 say, right?

17 A. Mm-hmm.

18 Q. In this diagram there are three different  
19 kinds of carpet. You see there's a red, a yellow, and a  
20 green, right?

21 A. Mm-hmm.

22 Q. And they have different -- say if you have to  
23 go to Home Depot or Lowe's and you want to buy carpet,  
24 there's different colors and cost of carpet to carpet  
25 this room.

1 A. Mm-hmm.

2 Q. If you were to go to Home Depot and figure  
3 out how much carpet you had to buy for red, how would  
4 you go about that?

5 MR. DAVIS: I object to the question.

6 This is totally off base for the purpose of  
7 this deposition. He's not an expert in  
8 carpet.

9 Q. You can answer.

10 A. How would I determine how much carpet to  
11 purchase at \$1,000 per square yard?

12 Q. Yeah, you would buy a square yard, correct?

13 MR. DAVIS: I'm going to object to the  
14 question. I think it's absurd to ask this  
15 expert about carpet.

16 MR. LaFATA: Speaking objection is  
17 noted.

18 A. You said this is 5 meters around.

19 Q. 5 yards, 5 yards.

20 A. It would be 1 square yard.

21 Q. Then the orange, you would -- yellow, which  
22 is \$100 per square yard, how would you figure out how  
23 much of that orange part to buy?

24 A. I'd multiply the number of squares, multiply  
25 it by 100. The same for 10.

1 Q. For the yellow carpet you do 3 times 3, is  
2 that what you're saying?

3 MR. DAVIS: Same objection.

4 A. No, I count them, 1, 2, 3, 4, 5, 6, 7, 8.

5 Q. 8 square yards in yellow?

6 A. That's right.

7 Q. It would be an error to say 3 times 3 and get  
8 9?

9 A. That's right.

10 Q. For the green, you would do the same thing?

11 A. Correct.

12 Q. You would get the -- how would you do it?  
13 How would you say it?

14 A. I would add up the number of 1 square yard  
15 units and multiply it by 100.

16 Q. It would be an error to say 5 times 5,  
17 correct?

18 MR. DAVIS: I object to this whole line  
19 of questioning and if you'll allow me to have  
20 a continuing objection to it, I won't  
21 interrupt; okay?

22 MR. LaFATA: Fine.

23 A. You would not multiply it.

24 Q. That would be an error?

25 A. That's correct.



1 Q. Hypothetically you would take 5 times 5 is  
2 25?

3 A. That's correct.

4 Q. 25 squares of green carpet?

5 A. That's correct.

6 (Exhibit P, chart, "Area of Plume",  
7 marked for identification, this date.)

8 Q. Okay. Dr. Siegel, you have Exhibit P in  
9 front of you, right?

10 A. Mm-hmm.

11 Q. This is a calculation sheet you used in your  
12 opinion, correct?

13 A. Correct.

14 Q. On the top table you have three rows area of  
15 plume from 10 to 100 for example; right? Do you see  
16 that row?

17 A. Yes.

18 Q. That is 32 million square meters, according  
19 to this?

20 A. Right.

21 Q. The next row is Area of Plume 100 to 1,000,  
22 right?

23 A. Yes.

24 Q. That's 18,680,000 square meters; correct?

25 A. Right.

1 Q. Then the row below that is area of plume of  
2 over 1,000 ppb?

3 A. Correct.

4 Q. On the far right you have a total mass of  
5 PFOA in nanograms per liter, right?

6 A. Correct.

7 Q. You got that by adding these three rows above  
8 it; correct?

9 A. Correct.

10 Q. That is 5.24 I guess to the 14th; is that  
11 right?

12 A. Correct.

13 Q. You described your approach in your model as  
14 a heuristic modeling of PFOA transport?

15 A. Right.

16 Q. What is a heuristic model to you?

17 A. Heuristic model is using an approach to  
18 broadly characterize what goes on in a system and you  
19 can do heuristic models using MODFLOW. You can use  
20 heuristic models -- it's kind of a conceptual model.

21 (Exhibit Q, "'Truth or Consequences' for  
22 the practicing hydrologist: On scientific  
23 certainty and ethics" by Siegel, marked for  
24 identification, this date.)

25 Q. Dr. Siegel, I handed you a copy of Exhibit Q.

1 This is an article by you, correct?

2 A. Correct.

3 Q. This is "'Truth or Consequences' for the  
4 practicing hydrologist: On scientific certainty and  
5 ethics"?

6 A. Correct.

7 Q. Then you published this in 2001, right?

8 A. Correct.

9 Q. In a publication called the Hydrological  
10 Processes?

11 A. Correct.

12 Q. And you worked on this -- you're the author  
13 of this?

14 A. I am the author.

15 Q. In the first paragraph you see there's the  
16 last sentence starts with "but," but hydro --

17 A. Wait. Where?

18 Q. The first paragraph, the last sentence starts  
19 with "but"?

20 A. First paragraph of this says "a number of  
21 years ago."

22 Q. Excuse me, the first paragraph, last sentence  
23 of the first paragraph.

24 A. "But," okay.

25 Q. "But hydrologists in the consulting workplace

1 have to legitimately wrestle now and then with what  
2 constitutes scientific 'truth', balancing what is right  
3 for science and the need to satisfy paying clients." Do  
4 you see that?

5 A. Yes.

6 Q. That's your view, correct?

7 A. Yes.

8 Q. And in your work in this case did you find  
9 you had to balance what constitutes scientific truth  
10 with what is the need to satisfy a paying client?

11 A. Absolutely not.

12 Q. You did not have to balance that?

13 A. No.

14 Q. In the next sentence it says, "The contrast  
15 between how science is done in academia and consulting  
16 can be striking." Do you see that?

17 A. Yes.

18 Q. You believe that to be the case?

19 A. It can be.

20 Q. That's -- that's sort of in consulting  
21 hydrology, right; that's what we're talking about here?

22 A. That's correct.

23 Q. That's what you're doing today, right?

24 A. Yes.

25 Q. And the last sentence of that paragraph, you

1 see "getting"?

2 A. Yes.

3 Q. "Getting to scientific 'truth' costs money  
4 and a dilemma always in practice is how much does a  
5 client want to pay for the truth he gets." Do you see  
6 that?

7 A. That's correct.

8 Q. That's your view, right?

9 A. There can be a dilemma depending on the  
10 particular case in question.

11 Q. You say here there's "a dilemma always in  
12 practice," don't you?

13 A. I guess in the context that scientists,  
14 academic scientists often want to learn more about the  
15 nuances of a scientific problem beyond which is  
16 necessary to resolve it in the applied world. I don't  
17 know of any academic scientist who would say I don't  
18 need any more data, and that's the name of the academic  
19 game but in -- as you know, in the real world, sometimes  
20 you can't -- there's not an infinite amount of funds no  
21 matter where you're working in an applied case, and  
22 sometimes academics find that dissatisfying. And that's  
23 the intent of this sentence.

24 Q. Okay. I'm asking about the text of the  
25 sentence that you wrote here, you write here there's

1 "always" the dilemma, correct?

2 A. Well, I think, yeah, I guess always. I  
3 mean, every problem I've looked at, gosh, it would be  
4 nice if I had this data but is it really necessary.

5 Q. You refer to how much the client wants to pay  
6 for the truth he gets, right?

7 A. Yes.

8 Q. You believe the truth you get should be a  
9 function of how much you pay to get it?

10 A. Well, no. But you can get to truth without  
11 having to understand all the nuances of problems. It  
12 depends -- it's problem based.

13 Q. All right.

14 A. It's problem based.

15 Q. Would you turn to the next page for me? In  
16 the second paragraph you see, "I like", right?

17 A. Yes.

18 Q. "I like to visualize the range of hydrologic  
19 certainty in practice as a white to black 'rainbow'  
20 continuum"; correct?

21 A. Yes.

22 Q. On the left side you have "certainty" and the  
23 right-hand side you have "dead wrong," right?

24 A. Right.

25 Q. You say, in the next sentence, "the lighter

1 left-hand side of the curve includes the certainty that  
2 academics strive to attain before they publish a paper,  
3 maybe greater than 90 percent"; right?

4 A. Mm-hmm.

5 Q. "Nobody likes to be proven wrong in print,"  
6 right?

7 A. Yes.

8 Q. And then you contrast that next paragraph:  
9 "In the legal arena concerning civil litigation, a  
10 certainty greater than 50 percent is the same as a  
11 certainty of 100 percent, a point worth pondering a  
12 bit." You say that, right?

13 A. Yes.

14 Q. You equate those two certainties, right?

15 A. Correct.

16 Q. And in the right above that diagram you see,  
17 "I put"?

18 A. Yes.

19 Q. "Based on the literature and my own 'best  
20 professional judgment', I put hydrogeologic technologies  
21 (my own specialty) such as modeling groundwater flow and  
22 solute transport in the uncertain gray to black area on  
23 the right-hand side of the curve"?

24 A. Hmm, mm.

25 Q. And then you cite yourself and some others,

1 right?

2 A. Yes.

3 Q. That's your view, correct?

4 A. That's correct, and others.

5 Q. And in the next paragraph you say, "Figure 1  
6 also can serve as a hydrologic 'truthfulness scale',  
7 right?

8 A. Correct.

9 Q. And you see there's a footnote underneath the  
10 figure that you drew?

11 A. Yes.

12 Q. Figure 1, and then do you see the last  
13 sentence there, "in presenting"?

14 A. Yes.

15 Q. Okay. "In presenting the figure, I certainly  
16 do not challenge the clear heuristic value of  
17 mathematical models or groundwater flow, solute  
18 transport, and chemical reactions," and you cite the  
19 source; right?

20 A. Correct.

21 Q. You say, "however, these methods in the  
22 context of applied hydrology do not accurately depict  
23 hydrologic and geochemical phenomena well;" correct?

24 A. Correct.

25 Q. That's your view, correct?



1           A.       That's my view.

2           Q.       On the right-hand column do you see the last  
3 paragraph there?

4           A.       Yes.

5           Q.       It says, "The purpose of law, of course, is  
6 not to discover 'truth' but, rather, to adjudicate  
7 disputes in a timely fashion," right?

8           A.       Yes.

9           Q.       That's your view, correct?

10          A.       Yes, but followed by the next sentence in  
11 context, "to this end, practicing hydrologists must  
12 learn to cut to the essence of complex problems in ways  
13 understandable to attorneys, juries, and clients."

14          Q.       Is your opinion, beyond from this case, not  
15 to discover the truth but to help resolve a conflict?

16          A.       No, I always go to discover the truth and in  
17 the process perhaps resolve a conflict.

18          Q.       It's your view the purpose of law, according  
19 to what you write, is not to discover the truth,  
20 correct?

21          A.       The purpose of law is to adjudicate disputes  
22 but if the resolution of disputes is done properly,  
23 truth comes out.

24          Q.       You say you want to adjudicate disputes in a  
25 timely fashion, correct?

1           A.       I don't know if I want to do it in a timely  
2 fashion but I think the legal system would like to see  
3 that.

4           Q.       You write here that it's to "adjudicate  
5 disputes in a timely fashion," correct?

6           A.       Fine enough.

7           Q.       Did you hurry your analysis in this case in  
8 order to issue an opinion in order to resolve a dispute?

9           A.       No.

10          Q.       Did you take any shortcuts in your analysis  
11 to help resolve a dispute in a timely fashion?

12          A.       No, I did what I thought was appropriate to  
13 evaluate the hydrogeology and the solute transport  
14 issues pertinent to this particular case and I think I  
15 did it appropriately for the purposes of determining  
16 whether Saint-Gobain was the source of contamination of  
17 the groundwater plume that is observed in the subsurface  
18 in the North Bennington area.

19                   THE VIDEOGRAPHER: While you're looking  
20 for the next document, would you like to  
21 change the media?

22                   MR. LaFATA: How much time do you have?

23                   THE VIDEOGRAPHER: 15 minutes.

24                   MR. LaFATA: Let's run it out.

25                   (Exhibit R, 1998 Spring Meeting American

1 Geophysical Union document, marked for  
2 identification, this date.)

3 BY MR. LaFATA:

4 Q. Dr. Siegel, you have Exhibit R in front of  
5 you?

6 A. Yes.

7 Q. This is an article that you published in 1998  
8 in the American Geophysical Union publication, right?

9 A. Yes.

10 MR. DAVIS: I'm not seeing an article --

11 A. It's abstracts.

12 Q. Okay. On the -- on page S113, do you see  
13 that?

14 A. Yes.

15 Q. On the bottom left is "Model Complexity in  
16 the Courtroom, a Comment From the Trenches"?

17 A. Yes.

18 Q. DI Siegel, correct?

19 A. Okay. I remember that but I'm trying to  
20 think where it is on here.

21 Q. Bottom left, starts at the bottom left, the  
22 bottom, right here.

23 A. Oh, yeah, got it. You may have to read this  
24 for me because --

25 Q. Well, that's okay. It's small print and it

1 continues over to the next column, right?

2 A. Yes, got it.

3 Q. The -- the first sentence in the bottom says,  
4 "five years ago, the National Research Council cautioned  
5 using groundwater models to predict solute, fate, and  
6 transport because of unknown natural variability of  
7 material properties." Do you see that?

8 A. Yes.

9 Q. Who is the National Research Council?

10 A. National Research Council is an arm of the,  
11 arm of the National Academies of Science and  
12 Engineering, and the purpose of the NRC is to provide  
13 guidance to the government and to science on issues of  
14 importance, and I served as chair of the Water Science  
15 and Technology Board of the NRC for a while and on maybe  
16 a dozen of their panels.

17 Q. Do views of the NRC have significant weight  
18 in your scientific field?

19 A. I believe they do.

20 Q. Would you agree that it would be reasonable  
21 for you to rely upon the opinions of the NRC in your  
22 field?

23 A. I rely upon them along with other things,  
24 right. I don't abide by them. It depends on what they  
25 come to.

1           Q.     What do you mean when you say you "don't  
2     abide by them"?

3           A.     Well, these are panels that are put together  
4     and they produce a document that expresses the views of  
5     a distinguished panel of scientists. Most of the time I  
6     agree with them. Other times I don't. It depends on  
7     the particular report.

8           Q.     Okay. Do you see in the second column at the  
9     top --

10          A.     Yeah.

11          Q.     -- in the middle there's a sentence that says  
12     "the reliability"?

13          A.     Oh, boy.

14                   MR. DAVIS: If you could read it, read  
15     it to him and we'll see if you read it  
16     correctly.

17          Q.     Do you see it says, "the reliability of even  
18     simple solute transport models, let alone complex ones  
19     to depict fate in transport outside their calibration  
20     sites has not been demonstrated." Do you see that?

21          A.     Yes. I've got to read this myself. Hold  
22     on. Hang on a second. Where --

23          Q.     It's right in the middle.

24          A.     "The reliability of even simple solute  
25     transport models, let alone complex ones to predict fate

1 and transport outside their calibration sites has not  
2 been demonstrated."

3 Well, in the context of the in-situ  
4 transport models, I'm looking -- this is addressing the  
5 kinds of in situ-transport models that are done in a two  
6 or three-dimensional frame. I'm not addressing in this  
7 the one-dimensional infiltration models that soil  
8 scientists use but even those have their own issues as  
9 we've talked about before. All right?

10 But this particular paper -- now I remember  
11 this because of the verbal fight I got in afterwards  
12 with one of the other people, very interesting. The --  
13 I was addressing the use of three-dimensional models  
14 more -- mostly that are used, whether they're analytical  
15 models, meaning pure calculus, or whether they're things  
16 like coupling MODFLOW with MT3D or method of -- variety  
17 of approaches, where you're looking at transport of  
18 significance as opposed to just vertically down through,  
19 you know, a few tens of meters of, say soil. That was  
20 the context of this paper. I remember this paper.

21 Q. The next sentence you see, "but groundwater  
22 models written to study processes are often used in  
23 user-friendly versions in courtroom settings designed  
24 not to seek truth but to resolve complaints." Do you  
25 see that?

1           A.       Yes.

2           Q.       Do you believe your groundwater model here is  
3 designed not to seek the truth but to resolve a  
4 complaint?

5           A.       No. It's to determine the truth of could  
6 the PFOA in a reasonable amount of time -- I shouldn't  
7 say reasonable -- how much time would it take more or  
8 less for PFOA to travel from the land surface to the  
9 water table.

10                    You know, it's -- now to the extent that  
11 it's being used to provide information to ultimately  
12 resolve a complaint, I guess that's the nature of why I  
13 did the model, but in none of my consulting have I ever  
14 done anything but to look at the problem the best I  
15 could and come up with what I thought the most  
16 appropriate ways to resolve the questions I'm asked to  
17 address.

18           Q.       It is your view, correct, that in courtroom  
19 settings, they're designed not to seek the truth but to  
20 resolve complaints?

21                    MR. DAVIS: Asked and answered.

22           A.       I think the court -- the court, from what I  
23 am informed by attorneys, is designed to settle disputes  
24 and in the -- you hope that through the process, truth  
25 will come out, whether it's civil litigation or a

1 criminal litigation. Ultimately it's to resolve a  
2 dispute.

3 Q. The truth is incidental?

4 A. No. One hopes the truth will come out.  
5 Sometimes -- think of OJ Simpson. You know, the truth  
6 turned out to be incidental. Fortunately in the  
7 consulting I've done over my career that hasn't been the  
8 case.

9 (Exhibit S, "Contamination in  
10 Orangetown: A Mock Trial and Site  
11 Investigation Exercise", Siegel and McKenzie,  
12 marked for identification, this date.)

13 Q. Dr. Siegel, you have Exhibit S in front of  
14 you, right?

15 A. Yes.

16 Q. This is also an article you wrote, correct?

17 A. Yes.

18 Q. It's Contamination in Orangetown: A Mock  
19 Trial and Site Investigation Exercise, right?

20 A. Correct.

21 Q. This was an exercise you did with some of the  
22 students you worked with, right?

23 A. Yes. This is part of my contaminant  
24 hydrogeology class that the last few years I was  
25 actually running with the law school at Syracuse.



1 Q. You gave them an exercise in which there was  
2 a groundwater contamination problem; you had them solve  
3 it and had them try a case, right?

4 A. That's right.

5 Q. Some people play lawyers, right?

6 A. That's right.

7 Q. Some people play experts who are analyzing  
8 the science?

9 A. That's right.

10 Q. And they put on a case?

11 A. That's right.

12 Q. And the case is judged?

13 A. That's right.

14 Q. And that was part of their curriculum?

15 A. That's right.

16 Q. Do you see -- would you turn with me to  
17 Page 270. Do you see there's a section Results?

18 A. Yes.

19 Q. There's a section on the right, Mock Trial?

20 A. Yes.

21 Q. Above that it looks like a picture of one of  
22 the trials?

23 A. That's correct.

24 Q. And there's a paragraph under Mock Trial  
25 starts with "the lawyers." Do you see that?

1 A. Yes.

2 Q. "The lawyers had prepared their witnesses to  
3 some extent before the trial, and we also gave students  
4 a list of critical elements for expert witnesses to  
5 know." Right?

6 A. Mm-hmm.

7 Q. And the critical elements are in table 2,  
8 right? You cite table 2?

9 A. Yes, which --

10 Q. Upper left?

11 A. It's been a long time since I've looked at  
12 this.

13 Q. Upper left?

14 A. Okay.

15 Q. Table 2 says Trial Facts and Hints for Expert  
16 Witnesses?

17 A. Yes.

18 Q. This is sort of a way to coach students to be  
19 expert witnesses?

20 A. Yes.

21 Q. The first principle here is purpose of trial,  
22 right?

23 A. Yes.

24 Q. The hint is to resolve disputes, not to  
25 determine the truth, right?

1           A.       Correct.

2           Q.       And that's your view of what the purpose of a  
3 trial is, right?

4           A.       That's the legal purpose of -- the legal  
5 purpose of trial is to resolve disputes. I teach my  
6 students when you provide testimony, you better darn  
7 well make it scientifically plausible or you're going to  
8 be marked down. You can't -- you can't distort the  
9 truth. It has to be within whatever their opinions come  
10 to. It has to be reasonable and solid in terms of their  
11 science. In no way do I teach my students to prostitute  
12 themselves and make up data or even install theoretical  
13 monitoring wells, which they do here, that won't lead to  
14 the best evaluation of a problem but also I tell them,  
15 you know, you do have a client and so where data is  
16 scanned, you know, you can give the most plausible  
17 evaluation you can but you -- it's a different world  
18 than academia.

19          Q.       None of what you just said is in this table,  
20 correct?

21          A.       Well, no.

22          Q.       First you identify, this is the hints for the  
23 expert witnesses that you were teaching, correct?

24          A.       Yes.

25          Q.       You tell these people who are going to be

1 expert witnesses the purpose of trial is not to  
2 resolve -- not to determine the truth; it's to resolve a  
3 dispute. That's what you told them, correct?

4 MR. DAVIS: Objection, asked and  
5 answered about five times.

6 A. But, again, you know, and my students I'm  
7 sure will tell you, that, you know, I tell them you have  
8 to do the best science you can with the data you have at  
9 hand.

10 Q. Is it more important to you to resolve a  
11 dispute or to find the truth?

12 A. To find the truth.

13 MR. LaFATA: Okay. We can go off the  
14 tape.

15 THE VIDEOGRAPHER: We're going off the  
16 record. This is the end of media number 2.  
17 The time is approximately 11:35 a.m.

18 (Whereupon, there was a pause in the  
19 proceedings.)

20 THE VIDEOGRAPHER: We're going back on  
21 the record. This is the beginning of media  
22 unit number 3. The time is approximately  
23 11:36 a.m. Please proceed.

24 BY MR. LaFATA:

25 Q. Are you ready to continue the deposition?

1 A. Yes.

2 Q. Do you believe that as a proposed expert  
3 witness in this case that you did not need to determine  
4 the truth for your opinion?

5 A. Of course I need to tell the truth and to  
6 determine the truth and that's what my opinion is; it's  
7 telling the truth.

8 Q. In your report you say that you served as an  
9 expert witness in a litigation by -- against Anschutz;  
10 is that right?

11 A. No, I was working -- oh, yes, against  
12 Anschutz. Wait a minute, I was working for Anschutz,  
13 I'm sorry. I was the last --

14 Q. Anschutz, it's pronounced Anschutz?

15 A. Anschutz.

16 Q. It's an oil company?

17 A. Oil and gas company, yeah.

18 Q. In that case you were hired by Anschutz as an  
19 expert witness?

20 A. Yes.

21 Q. You issued an expert report in 2013?

22 A. That's correct.

23 Q. You testified for Anschutz in that case?

24 A. That's correct.

25 Q. One of the issues in that case is whether oil

1 development activities caused the Plaintiffs'  
2 groundwater to be from those activities; correct?

3 A. That's correct.

4 Q. That was fracking activities?

5 A. I'm trying to recollect whether it was  
6 fracking or a straight-on well. I can't recall whether  
7 it was fracking or not.

8 Q. What is fracking?

9 A. Fracking is the introduction of water and  
10 chemicals under high pressure in order to crack shale to  
11 allow gas to come out of the shale into the well.

12 Q. In this case the claim is some of the gas  
13 polluted the water, right?

14 A. No, it had to do with iron and turbidity.

15 Q. You issued an expert report for Anschutz,  
16 correct?

17 A. Yes.

18 Q. Did you ensure your analysis was accurate  
19 there?

20 A. My analysis was -- I didn't ensure. It was  
21 accurate.

22 Q. My question is did you ensure it was  
23 accurate?

24 A. How do I -- I consider my analysis accurate  
25 and truthful.

1 Q. In Anschutz?

2 A. In the Anschutz case, yes; in all the cases  
3 I've been on.

4 Q. In that case did you apply reliable  
5 scientific principles and methods?

6 A. Absolutely.

7 Q. Did you ensure in that case you had  
8 sufficient and reliable data to form your opinion?

9 A. I felt I had sufficient data to apply my  
10 opinion.

11 Q. In that opinion -- to develop that opinion,  
12 you directly interviewed and relied on interviews of  
13 well drillers for example, right?

14 A. Yes, water -- I have to -- I can't recollect  
15 at this time but I believe we communicated with water  
16 well drillers.

17 Q. And with homeowners, too, right?

18 A. And homeowners.

19 Q. There were some regulatory officials you  
20 communicated with as well, right?

21 A. I'd have to go back. I can't remember  
22 exactly who I talked to on that case.

23 Q. Did you interview any homeowners here for  
24 your opinion?

25 A. No.

1 Q. Did you interview any well drillers here for  
2 your opinion?

3 A. No.

4 Q. And in Anschutz you inspected and sampled the  
5 Plaintiffs' wells, correct?

6 A. I'm trying to remember. I -- in the  
7 Anschutz case there was a set of data that was available  
8 but I can't recollect who obtained that data, I'm sorry.  
9 This is a case in the past.

10 (Exhibit T, "Exhibit 7", Big Flats  
11 Groundwater Investigation, Hinchey/Siegel,  
12 marked for identification, this date.)

13 Q. Dr. Siegel, you have a copy of Exhibit T in  
14 front of you.

15 A. Oh, this is Big Flats. Okay, I'm sorry, I'm  
16 thinking of a different case. Big Flats, okay. Thank  
17 you very much. It helps. Yes, okay. Maybe we should  
18 start again. I was thinking of another one.

19 Q. At least on the second page it's dated  
20 April 5th, 2013, right?

21 A. Yes.

22 Q. And this is prepared for Anschutz Exploration  
23 Corporation?

24 A. That's correct.

25 Q. And you worked with Edward Hinchey there?



1           A.       That's right.

2           Q.       Is that the same person you referred to  
3 earlier?

4           A.       That's correct. This was natural gas, too,  
5 yes.

6           Q.       This was -- that was the pollution issue in  
7 this?

8           A.       Let me look here. There was, yeah, natural  
9 gas, methane and trace metals both. My mind is coming  
10 back to it.

11          Q.       In this case you concluded that the natural  
12 gas and metals did not pollute the water; correct?

13          A.       We concluded that the trace metals and  
14 natural gas in homeowners' wells had nothing to do with  
15 the Plaintiffs' wells which were not fracked. This was  
16 not horizontal fracking. The wells were in limestone.

17          Q.       You concluded that the pollution did not come  
18 from Anschutz's activities?

19          A.       That's correct.

20          Q.       Do you recall, for this opinion, inspecting  
21 the Plaintiffs' wells in the case?

22          A.       I recall going with Hinchey to look at a  
23 couple wells but he did most of the field work.

24          Q.       Samples were taken of those wells there?

25          A.       Yes, sample was taken from water from the

1 wells.

2 Q. Water from the wells. Those are things you  
3 did not do here, right?

4 A. That's correct.

5 Q. In Anschutz you collected field data in  
6 notebooks, right?

7 A. Ed did, yes.

8 Q. You guys had some photographs taken for your  
9 work there, right?

10 A. I -- yes.

11 Q. You didn't do those things here, correct?

12 A. Here in Bennington, no.

13 Q. And for Anschutz you had soil borings done,  
14 right?

15 A. That's correct.

16 Q. And you did not do that here, did you?

17 A. No.

18 Q. For Anschutz you sampled water according to  
19 EPA regulatory standards, right?

20 A. That's correct.

21 Q. You didn't sample water here, correct?

22 A. I did no primary sampling here.

23 Q. Anschutz measured the concentration of  
24 tritium to determine the timing of water refresh,  
25 correct?

1 A. Correct.

2 Q. That's a standard practice, right?

3 A. I think it's standard now. It's getting  
4 standard now.

5 Q. You did not do that here, did you?

6 A. No, EPA did it here or, I'm sorry, USGS did  
7 it in Bennington recently.

8 Q. Did you rely on the tritium data in your  
9 opinion in this case?

10 A. Which case, the Anschutz case?

11 Q. The case we're here for?

12 A. The case here?

13 Q. Yes.

14 A. I did not rely upon it in my -- the report  
15 that I wrote but having seen the results at Northeast  
16 GSA on Tuesday, or Monday rather, this past Monday, I  
17 find it agrees with the results that I came to in my  
18 report but, no, I did not rely upon that data from the  
19 reports. I didn't have it at the time.

20 Q. You didn't collect any tritium data for  
21 analysis here?

22 A. No.

23 Q. In Anschutz you had the groundwater sent to a  
24 laboratory for testing, right?

25 A. Correct.

1 Q. You did not have any groundwater in this case  
2 sent to a lab for testing, did you?

3 A. No.

4 Q. In Anschutz you analyzed the isotopes in the  
5 samples to fingerprint the origin of the pollution,  
6 right?

7 A. Right.

8 Q. The fingerprinting method is widely accepted,  
9 right?

10 A. Correct.

11 Q. You didn't do that here, did you?

12 A. No.

13 Q. Would you please turn with me to -- let's  
14 see. Page -- on the top you see there's a Page 6 at the  
15 very top. There it is.

16 A. Yes.

17 Q. Is that your signature there?

18 A. Yes, it is.

19 Q. Do you recall writing a subsequent report in  
20 the same case?

21 A. I don't recollect.

22 Q. Do you recall critiquing the Plaintiffs'  
23 expert at Anschutz and the Plaintiffs' expert's methods  
24 in that case?

25 A. Yes.

1 Q. In that record you concluded that the  
2 Plaintiffs' expert who found that the oil company's  
3 activities did pollute the water was not comporting to  
4 the scientific method?

5 A. Correct.

6 Q. You criticized the Plaintiffs' expert there  
7 because he dismissed preexisting shallow natural gas as  
8 a potential source of the gas in the Plaintiffs' wells,  
9 right?

10 A. That's correct.

11 Q. And to dismiss alternative sources of  
12 groundwater contamination according to you does not  
13 comport with the scientific method, correct?

14 A. Well, it depends on the nature of the case.  
15 In this case methane occurs throughout the strata in  
16 south -- southern New York, top to bottom, so to dismiss  
17 that would be absurd.

18 Q. When you say "the nature of the case," what  
19 are the cases in which it would be proper scientific  
20 method to dismiss alternative sources of groundwater  
21 contamination?

22 A. That's a very broad question.

23 Q. Let me try it this way. Is there any case in  
24 which it would be appropriate to dismiss alternative  
25 sources of groundwater contamination under a scientific

1 method?

2 A. Well, if there is no direct evidence for  
3 that kind of contamination in multiple sources, then I  
4 wouldn't spend much time looking -- you know, addressing  
5 sources that I didn't see any evidence for being there.

6 Q. I'm asking --

7 A. That was kind of an awkward -- I said that  
8 very awkwardly but in -- if, for example, in this case,  
9 in Anschutz there was no evidence whatsoever that -- I  
10 mean, direct evidence that there was methane in strata  
11 above the zone being tapped for gas, then I wouldn't  
12 start looking for methane above it if there was no  
13 evidence that it was there.

14 Q. Let me ask it this way. When there is  
15 evidence of alternative sources of groundwater  
16 contamination, it does not comport with the scientific  
17 method to dismiss those sources, does it?

18 A. If there is evidence that is reasonably  
19 compelling that these -- there are other sources to  
20 produce the contamination observed in any particular  
21 case, then, I mean -- if there's no evidence, direct  
22 evidence that it's there, I wouldn't consider it. I  
23 don't know how -- I don't know.

24 (Exhibit U, "Exhibit 16", Big Flats  
25 Groundwater Investigation, Hinchey/Siegel,

1 Supplemental, marked for identification, this  
2 date.)

3 Q. Dr. Siegel, this is Exhibit U and do you  
4 see --

5 A. This is a supplemental report, okay.

6 Q. On the second page it refers to you, Don  
7 Siegel, Donald Siegel, Ph.D. as preparing this report  
8 with Edward Hinchey; is that correct?

9 A. That's correct.

10 Q. This is on May 30th, 2014?

11 A. Correct.

12 Q. And this was in the same case we were talking  
13 about before, correct?

14 A. Mm-hmm.

15 Q. Would you turn with me to Page 27, the last  
16 page?

17 A. Yes.

18 Q. Is that your signature there?

19 A. It's my signature.

20 Q. Okay. Would you turn to Page 11, please?

21 A. Okay.

22 Q. You see this paragraph that starts with  
23 Mr. Rubin?

24 A. Yes.

25 Q. Mr. Rubin was the Plaintiffs' expert in that

1 case, right?

2 A. Correct.

3 Q. The last sentence there says, "In our opinion  
4 Mr. Rubin's dismissal of preexisting, shallow natural  
5 gas as a potential source of the gas in Plaintiffs'  
6 wells does not comport with the scientific method."

7 That was your opinion, correct?

8 A. Correct.

9 Q. You would agree that to dismiss evidence of a  
10 potential alternative source of water pollution does not  
11 comport with the scientific method, wouldn't you?

12 A. I would agree if there's a compelling  
13 evidence of an additional source and you ignore it, that  
14 would not be an appropriate scientific method.

15 Q. In the next section you see, you wrote  
16 "Mr. Rubin concludes." Do you see that heading?

17 A. Yes.

18 Q. The last sentence in that says: "Mr. Rubin  
19 simply ignores this data, which is fatal to his  
20 analysis." Do you see that?

21 A. That's correct.

22 Q. You did not consider isotopic testing in this  
23 case, did you?

24 A. No, I didn't. Well, there was no isotopic  
25 data at the time that I prepared this report and I



1       didn't collect any isotopic data. I felt it was not  
2       necessary given my understanding of the hydrogeology of  
3       the area and what would be plausible.

4               Having said it now that there is isotopic  
5       data, as I said twice before; the USGS came out with  
6       some data, you know, it agrees with my broad  
7       conclusions.

8           Q.     Did you look for isotopic data when you  
9       issued your report in this case?

10          A.     I looked for isotopic data and couldn't find  
11       any in the literature or in any reports.

12                       (Exhibit V, "Draft Conceptual Modeling  
13       of PFOA Fate and Transport: North  
14       Bennington, Vermont", 6/17, marked for  
15       identification, this date.)

16          Q.     Dr. Siegel, do you have Exhibit V in front of  
17       you?

18          A.     Yes.

19          Q.     The first page says this is a Draft  
20       Conceptual Modeling of PFOA Fate and Transport North  
21       Bennington, Vermont; right?

22          A.     Yes.

23          Q.     It says June 2017, right?

24          A.     Yes.

25          Q.     This is something you looked at for your

1 report, correct?

2 A. Yes.

3 Q. Would you turn to Page 38, please.

4 A. Okay.

5 Q. See there's a section Multivariate Analyses  
6 of PFAS Data?

7 A. Yes.

8 Q. Do you see the second sentence in the first  
9 paragraph "by using"? "By using multivariate analysis  
10 (MVA) statistical approaches on the available data set  
11 previously latent, unrecognized relationships between  
12 samples may identify potentially separate sources of  
13 PFAS or may potentially identify the likelihood of a  
14 common source." Do you see that?

15 A. Yes.

16 Q. The second paragraph, it starts out with "MVA  
17 is a well-established set of statistical methods for  
18 evaluating data involving more than one variable,"  
19 right?

20 A. Yes.

21 MR. DAVIS: Wait a minute. Let me just  
22 object. Are you just agreeing with what he's  
23 reading?

24 THE WITNESS: His reading of it.

25 Q. Do you see that?

1 MR. DAVIS: Okay. Just want to make  
2 sure the answer is clear.

3 Q. 7.1 is a section Agglomerative Hierarchical  
4 Cluster Analysis. Do you see that?

5 A. Yes.

6 Q. Okay. Did you consider the isotopic  
7 statistical analysis from this report when you wrote  
8 yours?

9 A. There is no isotopic analysis.

10 Q. Did you consider the multivariate analysis on  
11 the isotopes collected when you did your analysis for  
12 this report?

13 A. There's no isotopes in this report.

14 Q. Did you consider the multivariate analysis  
15 when you issued your report in this case?

16 A. Yes.

17 Q. And you dismissed it, right?

18 A. Yes.

19 Q. You believe there is no other source of PFOA  
20 in the groundwater issue here other than the ChemFab or  
21 the Saint-Gobain facilities, right?

22 A. I think there's no other source of PFOA in  
23 the environment of Bennington other than the  
24 Saint-Gobain to arrive to the kind of distribution we  
25 see in it in the groundwater.

1 Q. Would you look at Exhibit A, your  
2 Declaration? Here it is. Turn to paragraph 11, please.  
3 Do you see paragraph 11?

4 A. Yep.

5 Q. In the last sentence there it says, you say,  
6 "in my opinion there is no credible evidence that there  
7 are other sources of PFOA in the groundwater in of  
8 contamination other than the ChemFab/Saint-Gobain  
9 facilities," correct?

10 A. Yes.

11 Q. It's an unqualified view, correct?

12 A. Correct.

13 Q. What are the other sources you considered for  
14 that opinion?

15 A. I looked at the documents from Vermont  
16 Department of Environmental -- DEC.

17 Q. I mean sources of PFOA.

18 A. What other sources of PFOA?

19 Q. Yes.

20 A. I looked at the Barr Engineering reports  
21 that document or purported to document potential sources  
22 of PFOA and what I saw was supposition and conjecture.  
23 I saw no evidence such as manifests of PFOA being  
24 purchased or -- by any other industry, with the one  
25 exception of it was a battery manufacturing facility,

1 and the Vermont DEC went in and did testing and found  
2 that the -- any PFOA that they produce had not --  
3 there's no evidence of a plume coming from their  
4 facility and that concentrations around that facility  
5 were commensurate to what was found elsewhere in that  
6 part of the contaminated area.

7 And the only evidence I've seen of the use  
8 of PFOA is Saint-Gobain and the deposition perhaps of  
9 some of their PFOA wastes in the Bennington landfill.

10 MR. LaFATA: Let's break for lunch, come  
11 back at 1:00.

12 MR. DAVIS: Okay.

13 THE VIDEOGRAPHER: Going off the record,  
14 the time is approximately 11:56 a.m.

15 (Whereupon, a luncheon recess was then  
16 taken.)

17 THE VIDEOGRAPHER: We are back on record  
18 at approximately 12:59 p.m. Please proceed.

19 BY MR. LaFATA:

20 Q. Dr. Siegel, are you ready to continue with  
21 your deposition?

22 A. Yes, I am.

23 Q. Did you have a nice lunch?

24 A. It was nice enough.

25 Q. So before we broke I was asking you about

1 your opinion about alternative sources of where PFOA may  
2 have come from?

3 A. That's right.

4 Q. And your opinion in this case is that there's  
5 no alternative source other than ChemFab and  
6 Saint-Gobain; correct?

7 A. That's correct.

8 Q. What are the alternative sources of PFOA that  
9 you considered before arriving at that opinion?

10 A. Well, I think we already went over that, you  
11 know, the -- I looked at the sources that were presented  
12 in Barr Engineering reports, potential sources, and  
13 since I -- and I saw what they proposed and I saw no  
14 evidence for PFOA being used. I saw a lot of  
15 suppositions but without any documentation that the  
16 product was used.

17 Q. I'm trying -- i want to make a list of the  
18 sources you considered of potential --

19 A. Well, I could go to the Barr Engineering  
20 report if you want.

21 Q. Sure. Is that in front of you? Are you  
22 talking about Exhibit V?

23 A. I'll check it out. E is this guy.

24 Q. V as in Victor.

25 A. V, oh. Okay. I thought you organized these

1 in order. Okay. Page 8 and 9, Ben-mount Corporation --  
2 want me to go through the list? I could.

3 Q. Let me ask you, sir, did you consider  
4 Ben-mount Corporation as a potential source of PFOA?

5 A. No, because I did not see any evidence that  
6 they actually used PFOA.

7 Q. Did you look for any evidence?

8 A. No.

9 Q. Did you -- next on there is B. Co., do you  
10 see that?

11 A. Yes.

12 Q. Do you consider B. Co. as a potential source  
13 of PFOA?

14 A. I looked at that, all of these and -- in the  
15 documentation that -- I saw no documentation provided by  
16 anyone that these companies, with the exception of  
17 Eveready had used PFOA. I see these suppositions but I  
18 don't see any evidence for it and neither did Vermont  
19 Department of Environmental Conservation.

20 Q. Is this the only source you looked at to see  
21 if there was evidence of whether these companies used  
22 PFOA compounds in their work?

23 A. I recall additional Barr revisions and I  
24 looked at those.

25 Q. Other than a source by Barr, did you look at

1 anything else?

2 A. I didn't personally go and search out  
3 potential sources.

4 Q. You mentioned that 5 is one that you  
5 considered, Eveready Battery Company, Inc., right?

6 A. I considered it.

7 Q. And did you rule that out?

8 A. I ruled it out on the basis that studies  
9 from or studies reported by the Vermont DEC said there  
10 was no evidence of any plume coming out of that source  
11 and so they concluded that there was no other source by  
12 PFOA -- for PFOA other than Saint-Gobain and agreed with  
13 that.

14 Q. I'm asking about your opinion in this case.  
15 For Eveready Battery, do you see here it says  
16 "Lithium-ion batteries contained PFAS"? Do you agree  
17 with that?

18 A. I -- I don't know if they contain PFAS but I  
19 know that based on what Vermont DEC concluded, that  
20 there was no contamination of PFOS from that facility to  
21 define a plume that suggests there was a release.

22 Q. So you ruled out Eveready Battery Company for  
23 your opinion in this case, correct?

24 A. Yes.

25 Q. And what was the basis for your decision to



1 rule them out?

2 A. I just told you.

3 Q. That's the complete basis for your reason to  
4 rule them out?

5 A. Yes. I didn't go to the battery company and  
6 do primary work trying to see if they had invoices and  
7 so forth to prove they incorporated PFOA.

8 Q. Do you see Courtaldis Structural Composites,  
9 Inc. above that?

10 A. Mm-hmm.

11 Q. You see it refers to Courtaldis disposing of  
12 unspecified quantities of Teflon film. Do you see that  
13 there?

14 A. Yes.

15 Q. You ruled out Courtaldis Structural Composites  
16 as a potential source of PFOA?

17 A. Again, I ruled it out and I ruled it out on  
18 the basis that the Vermont DEC had the means to do a  
19 thorough -- more thorough analysis than I could. I'm a  
20 hydrogeologist and said this was not a reasonable  
21 source.

22 Q. So you're really relying upon the Vermont DEC  
23 for your opinion here?

24 A. Yes.

25 Q. Other than these 11 sources here, did you

1 consider any other source for PFOA Bennington/North  
2 Bennington for your opinion in this case?

3 A. Not to my recollection.

4 Q. Did you consider any other EPA super fund  
5 sites in the area?

6 A. Well, there's the Bennington landfill and I  
7 spend quite a bit of time looking at reports on the  
8 Bennington landfill and so that's been proposed as being  
9 a possible source for PFOA and there was some evidence  
10 of PFOA moving from the landfill to the east in the sand  
11 and gravel deposits, but I saw no credible evidence that  
12 moved in any other direction.

13 And so there was a deposition of PFOA waste,  
14 I gather, from Saint-Gobain, according to EPA documents,  
15 to the tune of about 14,000 gallons, tanker truck worth,  
16 and so my -- my opinion would be that's probably the  
17 source of the PFOA that would be coming out of the  
18 landfill, migrating to the east of the landfill.

19 Q. Your reference to the -- strike that.

20 So we talked about the landfill. Did you  
21 consider any other EPA Superfund sites in the  
22 Bennington/North Bennington area for your opinions in  
23 this case?

24 A. There was one other landfill, and I can't  
25 recollect the name of it, that I think is in the general

1 area but I had seen nothing that would suggest that PFOA  
2 would be -- come out of it but I can't remember the name  
3 of that landfill. It was not a large issue here.

4 Q. You've mentioned the 11 companies in the Barr  
5 report; you mentioned the Bennington landfill and that  
6 other landfill. Did you consider any other EPA  
7 Superfund sites in the Bennington and North Bennington  
8 area for your opinions as the source of the PFOA?

9 A. I don't recollect. I also want to  
10 reiterate, the fundamental basis for my opinion is the  
11 very distribution of PFOA in the groundwater and the  
12 pattern of contamination starting at what I would argue  
13 as obviously the Saint-Gobain Water Street plants, and  
14 moving west to east, and the pattern is fully consistent  
15 with what I've seen in almost any other -- every other  
16 plume of contamination from high-to-low concentrations  
17 and dispersions commensurate with what would be expected  
18 from air deposition and so to me that's a very logical  
19 source, and I believe the DEC has come to the exact same  
20 conclusion.

21 MR. LaFATA: Move to strike everything  
22 after "I don't recollect" as nonresponsive.

23 Q. Did you consider any pollution or waste from  
24 the other businesses who are operating in the same  
25 building as ChemFab in North Bennington?

1           A.       No.

2           Q.       Did you consider any pollution or waste from  
3       the other businesses who are operating in the vicinity  
4       of the building at Northside Drive?

5           A.       No, because given it comparatively, the  
6       amount of emissions from Saint-Gobain, on the order of  
7       1,000 pounds or more per year to the atmosphere, I can't  
8       imagine a small business elsewhere would contribute  
9       significantly to contamination. That makes no sense to  
10      me.

11          Q.       But you did not check those other businesses?

12          A.       No, I did not check those other businesses.

13          Q.       Did you consider, other than the two  
14      landfills you mentioned, any other landfills in the  
15      Bennington/North Bennington area?

16          A.       For a brief time I looked at another  
17      landfill and in my mind I just forget at this time. I  
18      can't recollect the name of it but there's another  
19      landfill but it doesn't -- very quickly I didn't see  
20      anything that would suggest contamination coming out of  
21      it. To define contamination, in my world you have to  
22      see a plume, and if there's a meaningful contamination,  
23      you'd see multiple plumes and we only see one big one.

24          Q.       Did you consider any residential sources of  
25      PFOA in your opinion?

1           A.       No, no. That's laughable.

2           Q.       Did you consider any sources from commercial  
3 goods in your opinion?

4           A.       What do you mean by "commercial goods"?

5           Q.       Consumer goods?

6           A.       Haulers? Consumer goods?

7           Q.       Yes.

8           A.       PFOA?

9           Q.       Sure, PFOA.

10          A.       In what context?

11          Q.       I'm asking you for your opinion, did you  
12 consider any potential source from consumer goods when  
13 you issued your opinion in this case on the source of  
14 PFOA?

15          A.       I know that some consumer goods have PFAs on  
16 the interior, like popcorn bags and so forth to prevent  
17 food from sticking but to me that is a very small -- I  
18 just can't imagine that would be a -- contribute to  
19 contamination like this, so I consider it and I  
20 dismissed it as a meaningful source.

21          Q.       Now, I want to ask you about the Bennington  
22 landfill. Before I do that, was there, other than the  
23 sources we've talked about so far, were there any other  
24 sources that you considered for your opinion in this  
25 case?

1           A.       Those that would be mentioned in the Barr  
2       Engineering reports and it could be subsequent reports  
3       had more than this in more detail.

4           Q.       You rejected those, too?

5           A.       Yes.

6           Q.       For the Bennington landfill, you believe  
7       there's no risk from that landfill of offsite  
8       contamination, correct?

9           A.       No, I didn't say that. I said that there is  
10       the potential for offsite contamination from west to  
11       east and that's what the data, some of the data  
12       suggests.

13          Q.       Did you consider groundwater local data from  
14       bedrock wells in the landfill area?

15          A.       Yes.

16          Q.       And was one of those -- did you consider the  
17       PFOA readings from the well of the leachate from the  
18       Bennington landfill?

19          A.       I considered -- I looked at the most recent  
20       Barr result, looked at all the reports but that one I  
21       recall had a leachate collected from the fault and I  
22       looked at that -- those concentrations of constituents  
23       in that leachate. Yeah, of course I did.

24          Q.       What is the vault?

25          A.       The vault is part of the leachate collection

1 system on the landfill.

2 Q. What is leachate?

3 A. Leachate is liquid that is generated within  
4 the interior of municipal waste or any other landfill.

5 Q. The well you're referring to was collecting  
6 water from the vicinity of the leachate?

7 A. No, I believe the analysis came directly  
8 from the vault. At least it was listed as vault.

9 Q. Is the vault where the leachate is collected?

10 A. Some of the leachate is gathered and the  
11 leachate collection system is collected at the vault or  
12 accumulates in what they call the vault.

13 Q. Did you compare the quantity of PFOA  
14 collected from the vault sample to the PFOA detected in  
15 other bedrock wells in the vicinity of the Bennington  
16 landfill?

17 A. Well, I don't believe there's a bedrock well  
18 at the vault, although I might be wrong. I'd have to  
19 recollect, look back at it but, yes, I mean, the  
20 concentrations in the vault are much higher, much, much  
21 higher than any concentrations you see in any bedrock  
22 wells around the landfill.

23 Q. If there were a bedrock well to the southwest  
24 of the landfill in that vicinity that had PFOA levels  
25 that were similar to those in the vault, would that be

1 important to your analysis?

2 A. "Similar" meaning at similar concentrations?

3 Q. Yes.

4 A. Well, if there were a bedrock well near --  
5 off the landfill site that had 4,700 ppbs of PFOA, yeah.

6 Q. I'm asking if the PFOA quantity in, say a  
7 bedrock well to the southwest of the landfill were  
8 similar to the PFOA quantity in the --

9 A. What do you mean by "similar"?

10 Q. Do you understand the word similar?

11 A. No, I don't know what you mean by "similar."  
12 PFOA is PFOA.

13 Q. Similar quantities of PFOA.

14 A. Similar quantities?

15 Q. Yes.

16 A. So if there's a bedrock well off the site  
17 that had similar quantities as found in the vault, that  
18 would be meaningful, yes.

19 Q. That would be useful to your analysis?

20 A. It would be.

21 Q. If that well were, say to the south or the  
22 southwest, would that indicate to you the potential of  
23 flow of PFOA compounds from the landfill in those  
24 directions?

25 A. If it had PFOA in the thousands.



1 Q. If the PFOA were similar to what was detected  
2 in the vault, would that --

3 MR. DAVIS: Objection, it is vague.

4 A. I'm defining similar in the concentrations  
5 in the same order of magnitude, so in that case, yes.

6 (Exhibit W, Site Assessment Program  
7 Final Technical Report by US EPA 9/13/17,  
8 marked for identification, this date.)

9 Q. Dr. Siegel, you have a copy of Exhibit W in  
10 front of you.

11 A. Mm-hmm.

12 Q. Do you see at the top it says Site Assessment  
13 Program, Final Technical Report of the Bennington  
14 Municipal Sanitary Landfill Site, Bennington, Bennington  
15 County, Vermont. Do you see that?

16 A. Yes.

17 Q. This was prepared for the US Environmental  
18 Protection Agency. Do you see that?

19 A. Yes.

20 Q. On the bottom it was submitted by Weston  
21 Solutions, Inc.; right?

22 A. Yes.

23 Q. It's dated September 13, 2017?

24 A. Yes.

25 Q. Would you please turn to Page 2.

1 A. Okay.

2 Q. Do you see the penultimate paragraph, The  
3 occurrence, the second-to-last paragraph?

4 A. Yes.

5 Q. The occurrence of PFAS in surface water and  
6 outfall, leachate, and sediment samples may suggest that  
7 PFAS contamination is present throughout the landfill  
8 area and may indicate that wastes buried at the landfill  
9 may have leached from the landfill into the groundwater,  
10 surface water, and sediments.

11 Did identify read that correctly?

12 A. You read it correctly and basically what  
13 I'm -- my understanding, it could leach indeed into the  
14 sediments and the aquifer, the upper aquifer which is  
15 separated from the bedrock beneath and then it moves to  
16 the east and so, yeah.

17 Q. Is it your opinion or did you see anything  
18 that suggests that Saint-Gobain reported disposing PFOA  
19 contaminated waste into the landfill in 1997?

20 A. I'd have to refer to the EPA document that  
21 listed the amounts and kinds of contamination that were  
22 contributed to the landfill. I can't recall the date of  
23 it. I don't recollect it at this time. I would want to  
24 look at the document.

25 Q. Do you have Exhibit B, your report, in front

1 of you?

2 A. Here it is.

3 Q. Turn to Page 2-1.

4 A. Okay.

5 Q. You see the last sentence on that page, you  
6 state, "Saint-Gobain reported disposing PFOA  
7 contaminated waste into the landfill (US EPA 1997)"?

8 A. Yes.

9 Q. Was that the source for that opinion you  
10 expressed there?

11 A. Yes.

12 Q. Did Saint-Gobain have any operations in  
13 Vermont in 1997?

14 A. I believe the Water Street plant began in  
15 1978 and I'm wondering if this date may be wrong. I can  
16 look.

17 Q. What is your understanding of when  
18 Saint-Gobain Performance Plastics began any business in  
19 Vermont?

20 A. Well, the North Bennington site began prior  
21 to '78 and then closed and then the -- my understanding,  
22 the Water Street plant opened up after that. If I  
23 may -- I'd like to look at the document I referred to  
24 here, if I may.

25 Q. I've got a copy for you here.

1 (Exhibit X, US EPA report, 6/5/97,  
2 Bennington Landfill Superfund Site, marked  
3 for identification, this date.)

4 Q. You see the front page it says --

5 A. Yes.

6 Q. -- June 5th, 1997?

7 A. That is correct.

8 Q. Would you turn to the third page where  
9 there's a chart here? Do you see that?

10 A. Yes.

11 Q. And at the top it says Bennington Landfill  
12 De Minimis Eligibility and Fair Share Analysis. Do you  
13 see that?

14 A. Yes.

15 Q. Saint-Gobain is not listed in this chart,  
16 correct?

17 A. I see ChemFab.

18 Q. My question is Saint-Gobain is not listed in  
19 this chart?

20 A. No, it is not. No, it is not.

21 Q. On Page 2 or where it says ChemFab, do you  
22 see that row?

23 A. Yes.

24 Q. PFOA is not stated in this row; is that  
25 correct?

1           A.       No, it is not; however, if you follow  
2       through to page -- just a moment -- Page 2, ChemFab  
3       is -- I would view is the same as Saint-Gobain.  
4       Estimated number of waste volume is 14,000 gallons and  
5       then the bottom, it says waste includes 1 gallon per  
6       month of degreasers, 6 gallons of lubricating and  
7       hydraulic oils, and so on.

8                   And so it leaves a large volume of fluid  
9       that's not described, and so I think it's reasonable to  
10      assume it's the byproducts of their manufacturing.

11           Q.       PFOA does not appear on this page, correct?

12           A.       No, it doesn't appear directly on this page.

13           Q.       This report does not talk about the discharge  
14      of any PFOA by ChemFab or Saint-Gobain, correct?

15           A.       No, but if it's not hydraulic oils,  
16      degreasers, settling sludges, and so forth, the only  
17      thing left is -- if it's liquid, would be suspensions  
18      and so forth that would have been used. I know you may  
19      not believe me but I don't know if -- they're not going  
20      to dispose of water.

21           Q.       Did you consider whether pollution from the  
22      Kosher Drive landfill may have caused PFOA to enter the  
23      water?

24           A.       Which landfill?

25           Q.       Kosher Drive?

1 A. Kosher?

2 Q. K-O-C-H-E-R.

3 A. Kocher Drive, no, I did not.

4 MR. DAVIS: I think it's Kocher.

5 Q. Have you been to the Kocher Drive Landfill?

6 A. No.

7 Q. Have you been to the Bennington Landfill?

8 A. Yes.

9 Q. When was that?

10 A. Same time I mentioned before. We went on a  
11 site visit.

12 Q. What did you do there?

13 A. We drove around. I looked at outcrops  
14 around it, got a sense again of what the lay of the land  
15 was and what the landfill is.

16 Q. How much time did you spend there roughly?

17 A. Oh, an hour and a half roughly.

18 Q. Have you ever been to the Kocher Drive  
19 landfill?

20 A. No.

21 Q. Did you consider the monitoring well results  
22 of -- showing PFOA from the Kocher Drive landfill?

23 A. Not to my recollection.

24 Q. Did you do any analysis on the Kocher Drive  
25 landfill for your opinion?

1 A. No.

2 Q. Did you consider the Burgess Brothers  
3 Landfill in your opinion?

4 A. Well, let me -- I guess if these landfills  
5 fall within the zone of contamination as defined by the  
6 DEC and to the extent that they might be there, I saw no  
7 other evidence of plumes that would be coming out that  
8 would be emanating from a large source of PFOA. That  
9 would suggest that would be the case.

10 Q. Have you ever worked for Saint-Gobain  
11 Performance Plastics?

12 A. No.

13 Q. Have you ever worked for ChemFab?

14 A. No.

15 Q. Have you ever worked for DuPont?

16 A. No.

17 Q. Seymour's (ph)?

18 A. No.

19 Q. 3M?

20 A. No.

21 Q. Have you ever worked for any manufacturer of  
22 fluoropolymers?

23 A. Not to my knowledge.

24 Q. Ever worked for any processor of  
25 fluoropolymers?

1           A.       Well, I've worked for oil and gas companies.  
2       I don't know if they process fluoropolymers. That's the  
3       only one I could think of, you know.

4           Q.       When was the first time you heard about PFOA?

5           A.       Oh, I heard about it, oh, back in around  
6       2000, more or less, 8 or 9. It was -- the literature  
7       started having stuff on it coming out, and it's being  
8       viewed as an emergent type of contaminant and in my  
9       contaminant hydrogeology class, I had a section on  
10      emerging contaminants that will need to be looked at  
11      potentially in terms of endocrine inhibitors and so  
12      forth.

13          Q.       The endocrine system of the body?

14          A.       Yeah, right, things that harm the endocrine  
15      system, the body, and the USGS had been doing a lot of  
16      work on this and I was -- I mean, I've been connected  
17      with the survey my whole life in one way or another and  
18      so I sort of just kept my eye on it in order to keep  
19      current.

20                    So that sort of came up, you know, and then  
21      the PFOA in the West Virginia case was pretty -- got a  
22      lot of press and so forth and that caught my attention.

23          Q.       To be clear, in this case you do not issue an  
24      opinion on the -- whether or not PFOA has any effect on  
25      the endocrine system?



1 A. No, no, no.

2 Q. When was the first time you heard about APFO?

3 A. Well, that's the ammonia version of it.  
4 When I started looking at just general review of it  
5 and -- it's a salt of PFOA but I can't remember exactly  
6 when I first heard of it.

7 Q. What is the first groundwater project you  
8 worked on involving PFOA?

9 A. This is the first one.

10 Q. Do you have your second report in front of  
11 you, Exhibit I?

12 A. I'll try and sort this.

13 MR. DAVIS: You can use my copy.

14 THE WITNESS: That's annoying.

15 MR. LaFATA: This is the one we were  
16 looking for last time.

17 MR. DAVIS: I just gave him my copy.

18 MR. LaFATA: Okay.

19 BY MR. LaFATA:

20 Q. Would you turn to Page 1-1, please?

21 A. Okay.

22 Q. This is a summary of your opinions, correct?

23 A. Yes.

24 Q. You talk about what industries who made PFOA  
25 knew, correct?

1 A. Yes.

2 Q. You talk about what industries that used PFOA  
3 knew?

4 A. Yes.

5 Q. You talked about what ChemFab knew?

6 A. No, I think I talk about what they should  
7 have known.

8 Q. Where do you say that?

9 A. Where do I say that?

10 Q. On Page 2-1, this will help.

11 A. Okay. "Industries involved in the  
12 manufacture and use of per and poly-fluorinated  
13 hydrocarbons knew for decades that fluorinated  
14 hydrocarbons were released to the atmosphere."

15 So in the sense that embraces ChemFab.

16 Q. So you talk in this report about what ChemFab  
17 knew, right?

18 A. No, what I'm talking about in this report is  
19 what ChemFab should have -- well, I imagine they  
20 would -- yes, what they knew, assuming that they were a  
21 competent company that had chemists and so forth  
22 involved in their operations.

23 Q. Turn to Page 2.1, please. And the last  
24 paragraph there "in addition," do you see you say --

25 A. Yes.

1 Q. -- "in addition, ChemFab/Saint-Gobain knew or  
2 should have known about the emissions of PFOA from its  
3 processes", right?

4 A. That's correct.

5 Q. So this is where you refer to what ChemFab  
6 knew, right?

7 A. Knew or should have known.

8 Q. You refer to what Saint-Gobain knew, correct?

9 A. Or should have known. Don't take it out of  
10 context.

11 Q. Those are separate things, "knew" and "should  
12 have known"?

13 A. It's part of the same sentence.

14 Q. Let me ask you this. Is what someone knows  
15 what they should know?

16 A. Well, they're separate but they should have  
17 known or they knew. What can I say?

18 Q. Would you turn to Page 2-3, please?

19 A. Yeah.

20 Q. You have a figure 1 there, right?

21 A. Correct.

22 Q. You refer to this as the number of times PFOA  
23 was cited in publications by year?

24 A. Right.

25 Q. To get this chart you entered some searches

1 into a website, right?

2 A. Right.

3 Q. And you identify that website there?

4 A. Web of Science, correct.

5 Q. You said you did an index -- let me rephrase  
6 that question.

7 You said you did a search for words in the  
8 titles, right?

9 A. Correct.

10 Q. And those words were PFOA, right?

11 A. Yes.

12 Q. Perfluorooctanoic acid?

13 A. Yes.

14 Q. And C-8?

15 A. Yes.

16 Q. And that search resulted in 3,841 citations,  
17 correct?

18 A. Yes.

19 Q. How many hits were there for PFOA?

20 A. I don't know. This is a combined search.

21 Q. Who did the search?

22 A. Ed Hinchey did the search.

23 Q. How many hits were there for C-8?

24 A. I don't know. This was a combined. They  
25 used all of these terms in a single search so you can't

1 distinguish one versus the other.

2 Q. When the combined results were reported to  
3 you, was there any effort to subtract the hits for C-8  
4 that refer to the C8 protein?

5 A. No.

6 Q. Were there any efforts to subtract the hits  
7 that refer to the human immune compound C8?

8 A. No.

9 Q. Were there any efforts to subtract that refer  
10 to a hereditary deficiency, C8?

11 A. No.

12 Q. That refer to the cervical spinal node C8?

13 A. No, but -- okay, no.

14 Q. Was there any effort to subtract from the  
15 records C8 calcium channel blocker?

16 A. No.

17 Q. Is there any effort to remove any references  
18 to astronomy from the result?

19 A. Not that I know of.

20 Q. These were just aggregated for you and --

21 A. An aggregate.

22 Q. -- he handed those off to you?

23 A. Yes.

24 Q. Back to Page 2-1, please. The sentence we  
25 read before, you say that ChemFab/Saint-Gobain knew or

1     should have known about the emissions of PFOA from its  
2     processes, right?

3             A.     Yes.

4             Q.     What processes are you referring to?

5             A.     In particular, the baking of fabric soaked  
6     in the PFOA emulsion with Teflon.

7             Q.     Any other processes?

8             A.     That's the major process that I think --  
9     that I -- that contributed to the atmospheric release of  
10    PFOA.

11            Q.     What other processes did ChemFab have in  
12    Bennington and North Bennington?

13            A.     The one that I'm most -- I would defer to  
14    Phil Hopke. If you give me his opinions, I could go  
15    through that. In fact it's here.

16                   MR. DAVIS: One of them. I don't know.

17            A.     Referred to his merit reports because he's  
18    the expert on the manufacturing process.

19            Q.     That's not you, right?

20            A.     That's not me, no.

21            Q.     So you rely upon his report for that part of  
22    your opinion?

23            A.     For that -- for a large part of my opinion  
24    but also I'm aware by reading literature that the  
25    preparation of the fabric used in the ChemFab involved

1 dipping fabric and other substances in an emulsion of  
2 PFOA and then would go up through several stages. I'm  
3 not an engineer so I can't address it but eventually  
4 it'd bake off the moisture and ultimately fuse the  
5 Teflon, so to that extent.

6 Q. When you say PFOA emulsion, what are you  
7 referring to?

8 A. I'm referring to the dispersions of PFOA, as  
9 I understand it, that are provided to ChemFab by, I  
10 believe it was DuPont.

11 Q. What is your understanding of what was  
12 contained in those dispersions of PFOA?

13 A. The PFOA and I believe Teflon.

14 Q. Do you have any understanding about how much  
15 PFOA was contained in those dispersions?

16 A. I think it's close to saturation of PFOA, on  
17 the order of -- I forget how many milligrams per liter  
18 would that be.

19 Q. What does saturation PFOA mean?

20 A. That means you can't put anymore in the  
21 water to get it to dissolve anymore.

22 Q. What is the basis for that belief?

23 A. Saturation, it's thermodynamics.

24 Q. What is the basis for the belief that the  
25 amount of PFOA in these mixtures was at the saturation

1 point?

2 A. I recall reading that somewhere but I can't  
3 recollect the actual document. It could very well be in  
4 Hopke here.

5 Q. Did ChemFab make PFOA?

6 A. No.

7 Q. Did Saint-Gobain make PFOA?

8 A. I don't believe so. I think it was Dupont  
9 and/or 3M made PFOA.

10 Q. Do you know how many towers ChemFab used  
11 during its time in Bennington?

12 A. I think -- well, at the Water Street plant,  
13 I think it was up to 11 but it varied over time.

14 Q. What about in North Bennington?

15 A. There were fewer; I think there were three.

16 Q. How were those towers configured; do you  
17 know?

18 A. I'm not an engineer.

19 Q. Do you know what metals were used in those  
20 towers?

21 A. What metals the towers were constructed of?

22 Q. Yes.

23 A. Such as iron or the tower itself?

24 Q. Do you know that?

25 A. No, I don't know that.



1 Q. Do you know what temperatures they ran at?

2 A. They ran up to a high enough temperature to  
3 fuse the Teflon, which I'd have to go back and see what  
4 it is, but it's well above 300 degrees.

5 Q. Do you know whether or not the towers ran at  
6 the same or different temperatures over time?

7 A. No, I'm -- I have no expertise in that.

8 Q. Do you know what pH level is maintained in  
9 the emulsion?

10 A. No. I --

11 Q. Okay. Do you know who prepared the  
12 emulsions?

13 A. No.

14 Q. Do you know how long the towers operated?

15 A. I believe they operated for the life of the  
16 plant.

17 Q. Do you know which solutions ChemFab used that  
18 did not contain PFOA?

19 A. There was one, I believe, called P170 which  
20 did not contain PFOA.

21 Q. Do you have any idea what that is, P170?

22 A. It's a -- well, I have a document I can  
23 refer to.

24 Q. Sure.

25 A. It's Material Safety Data Sheet here for --

1 let's see. That's Flourad brand fluorochemical  
2 surfactant by 3M.

3 Q. That one did not have PFOA?

4 A. No.

5 Q. Any others that you're aware of?

6 A. No.

7 Q. Is it your belief that all the others contain  
8 PFOA?

9 A. I don't know. The other ones -- well, PFOA  
10 was, to my understanding, the dominant C-8 compound  
11 used. To the extent other C-8 compounds might have been  
12 in that emulsion as a contaminant, say at smaller  
13 concentrations, I can't speak.

14 Q. You have to look at the MSDS to answer those  
15 questions?

16 A. Well, that and also you can look at, for  
17 example, PFASs that are discovered, say in the soils  
18 outside the plant which are a multiple number of  
19 compounds so -- so it may be indirectly you could get at  
20 that.

21 Q. You refer in the second report to  
22 chlorofluorocarbons, right?

23 A. Right.

24 Q. Those are compounds that contain chlorine,  
25 correct?

1 A. Yes.

2 Q. PFOA does not contain chlorine?

3 A. But that, I referred in the context of  
4 tracing.

5 Q. APFO did not contain chlorine, right?

6 A. No. No, just that the fluorinated and the  
7 chlorinated compounds of that kind, a pretty persistent  
8 environment, and that's why you use as tracers in the  
9 environment.

10 (Exhibit Y, "Exotic Tracers for  
11 Atmospheric Studies", Lovelock/Ferber, marked  
12 for identification, this date.)

13 Q. Do you recall looking at Martin, Lovelock,  
14 and Ferber article?

15 A. Yes.

16 Q. This is something you reviewed for your  
17 opinion, right?

18 A. Yes.

19 Q. On Page 1468 --

20 A. Okay.

21 Q. -- do you see there's a section Properties of  
22 Perfluoro Compounds?

23 A. Yes.

24 Q. And the penultimate paragraph starts with "a  
25 tendency." Do you see that?

1           A.       Yes.

2           Q.       See that paragraph? It says, "the tendency  
3 of perfluorocarbons to exhibit extremes in their  
4 properties with small structural or compositional  
5 changes applies also to the reaction with electrons"?

6           A.       Yes.

7           Q.       Do you agree with that?

8           A.       Yes.

9           Q.       PFOA does not appear in this article,  
10 correct?

11          A.       No, no, but I think the point I was making  
12 is that fluorinated organic compounds have been known  
13 for decades to be very persistent in the environment.  
14 Some are perhaps more persistent than others but that's  
15 why we can see them and use them as tracers. And so  
16 that was my point; that chemists who work with  
17 fluorinated compounds should be aware that they are  
18 potentially very persistent and they don't biodegrade.

19          Q.       This article is dated 1981, correct?

20          A.       Yes.

21          Q.       Actually might be '82, one of those?

22          A.       Mm-hmm.

23                   MR. DAVIS: Did you make an exhibit out  
24 of it?

25                   MR. LaFATA: Yes, I believe I did.

1 THE WITNESS: Y.

2 MR. DAVIS: You didn't mention it on the  
3 record.

4 BY MR. LaFATA:

5 Q. In your second report you also refer to  
6 certain documents by DuPont, right?

7 A. Yes.

8 Q. What, if anything, did Dupont have to do with  
9 PFOA?

10 A. Well, Dupont -- Dupont was -- their  
11 Washington Works facility contaminated a broad area  
12 through air emissions and also surface releases of PFOA  
13 and so this was a pretty important case and it alerted  
14 people of the potential for the atmospheric release of  
15 PFOA from manufacturing facilities so -- and from the  
16 use of it.

17 Q. What processes did Dupont employ with regard  
18 to PFOA?

19 A. By processes what do you mean? How they  
20 made it or how they --

21 Q. I'm just asking what processes did they use  
22 with respect to PFOA?

23 A. I can't recollect but I know that it was  
24 released as an atmospheric contaminant.

25 Q. You included certain Dupont documents along

1 with the second report you have in your hand, right?

2 A. Mm-hmm.

3 MR. LaFATA: Mark these in a group.

4 (Exhibit Z, 8/28/88 interoffice memo,  
5 Playtis to Zipfel, EID079090, marked for  
6 identification, this date.)

7 (Exhibit AA, 5/12/87 interoffice memo,  
8 Playtis to Zipfel, EID079091-094, marked for  
9 identification, this date.)

10 (Exhibit BB, C-8 Sampling (March-June  
11 1984), EID103022, marked for identification,  
12 this date.)

13 Q. Dr. Siegel, you have in front of you  
14 Exhibits Z, AA, BB, right?

15 A. Correct.

16 Q. These are the Dupont documents you refer to  
17 in your report, with your report, correct?

18 A. Correct.

19 Q. Exhibit Z is an Interoffice Memorandum,  
20 right?

21 A. Correct.

22 Q. How did you get a copy of this document?

23 A. I believe I received it from counsel.

24 Q. From which counsel?

25 A. I believe from Mr. Davis here.

1 Q. Okay. Do you know who Roger Zipfel is?

2 A. Where do you see the name, Roger -- oh, no,  
3 I do not.

4 Q. Do you know who John Crum is?

5 A. No.

6 Q. Or Walter Stewart?

7 A. No.

8 Q. This is dated 1988, correct?

9 A. Correct.

10 Q. And when was the first time you'd seen this  
11 document?

12 A. I don't recollect. It was the past few  
13 months when I began working on the project.

14 Q. Exhibit AA you have in front of you?

15 A. Yes.

16 Q. How did you get a copy of this?

17 A. From counsel.

18 Q. From which counsel?

19 A. I believe this counsel here.

20 Q. Mr. Davis?

21 A. Mr. Davis, yeah.

22 Q. He's here?

23 MR. DAVIS: I think I am. I'm not sure  
24 but talk about me anyway.

25 Q. It says at the top Interoffice Memorandum,

1 correct?

2 A. Correct.

3 Q. The date is 1987, right?

4 A. Correct.

5 Q. It's from a Tony Playtis?

6 A. Playtis, yes.

7 Q. Do you know who he is?

8 A. No.

9 Q. Do you know what -- in the department it says  
10 Teftech?

11 A. Yes.

12 Q. Do you know what that refers to?

13 A. I don't know but by the name could be Teflon  
14 Tech. I don't know.

15 Q. It's to Roger Zipfel again; do you see that?

16 A. Yes.

17 Q. When was the first time you'd seen this  
18 document?

19 A. Again, I can't recollect actually when I  
20 received it.

21 Q. Was it in the last couple months?

22 A. Probably the past four or five months but I  
23 can't recall when I got it.

24 Q. Ballpark?

25 A. Yeah.



1 Q. On the second page do you see there's another  
2 document; Analytical Report, same exhibit, second page?

3 A. Yes.

4 Q. Are you used to seeing analytical reports  
5 from Dupont?

6 A. No.

7 Q. Under "from" it says MJ Vilone. Do you see  
8 that?

9 A. Yes.

10 Q. Do you know who that is?

11 A. No.

12 Q. What about RN Vasta?

13 A. No.

14 Q. Do you know who that is?

15 A. No.

16 Q. Do you see there's a list of people in the cc  
17 on the upper right-hand corner?

18 A. Correct.

19 Q. Do you know who any of those people are?

20 A. No.

21 Q. This is dated 1987?

22 A. Correct.

23 Q. You have a copy of Exhibit BB in front of  
24 you?

25 A. Yes.

1 Q. When was the first time you saw this  
2 document?

3 A. Again, I can't recollect. I believe I  
4 received them all at the same time.

5 Q. Okay. And do you know where this document  
6 came from?

7 A. I can't recollect exactly what document,  
8 where it came from.

9 Q. You see there's a yellow box in the middle of  
10 the document?

11 A. Yes.

12 Q. Was that on it when you received it?

13 A. I think it was.

14 Q. Do you know where that came from?

15 A. No.

16 Q. Do you know who wrote this document?

17 A. No.

18 Q. Okay.

19 (Exhibit CC, "DuPont Hid Teflon  
20 Pollution For Decades," 12/13/02, marked for  
21 identification, this date.)

22 Q. Dr. Siegel, you have in front of you a copy  
23 of Exhibit CC, right?

24 A. Mm-hmm.

25 Q. This is a document you provided along with

1 your report, correct?

2 A. Yes.

3 Q. It's titled Dupont Hid Teflon Pollution For  
4 Decades, right?

5 A. Yes.

6 Q. In the subtitle it says, "Secret test  
7 conducted in 1984 by Dupont found a Teflon-related  
8 contaminant (C-8) in the tap water of the Little Hocking  
9 Water Association in Ohio just across the river from the  
10 company's Teflon plant in Parkersburg, West Virginia,"  
11 right?

12 A. Right.

13 Q. The next statement says, "the company never  
14 told the community, its water utility, or state  
15 regulators about the tap water testing program that  
16 continued through, at least until 1989 or about the  
17 positive findings"; correct?

18 A. Yes, correct.

19 Q. This article is dated December 13, 1982?

20 A. Yes.

21 Q. Do you recall where this document came from?

22 A. Just a moment, okay? I'm looking in the  
23 references to see where it came from. I should have put  
24 it in the references but I don't see it.

25 Q. Do you happen to recall where it came from?

1           A.     No, I don't at this time.

2           Q.     Could this be a news article from the  
3 Internet somewhere?

4           A.     Yeah, I think it appears to be a news  
5 article from the Internet but I -- I can't recall  
6 exactly where it came from, I'm sorry.

7           Q.     On Page 2 on the bottom there's a heading, it  
8 says Secret Tests. Do you see that?

9           A.     Page 2?

10          Q.     Mm-hmm. By your left hand. There's a  
11 heading on the bottom of the page, says Secret Test.

12          A.     Ah-ha, yes.

13          Q.     It continues on the next page, "DuPont's  
14 internal documents show that the company detected C-8 in  
15 the Little Hocking tap water in 1984"; right?

16          A.     Yes.

17          Q.     There's a link there to look at the document?

18          A.     Yes.

19          Q.     Do you recall whether you looked at any of  
20 the documents that were linked to this article?

21          A.     I think I did go on, on recollection, to  
22 look at some of these documents from the site.

23          Q.     You don't refer to them in your report, do  
24 you?

25          A.     No.

1 Q. And for this exhibit and the Dupont documents  
2 we looked through, none of those suggests that any of  
3 that information was told to ChemFab, does it?

4 A. No, there's no indication that any of this  
5 information was directly told to people in ChemFab, but  
6 I would think that ChemFab would have been aware of it  
7 given that they used the same products and so forth.

8 Q. What's the basis for that belief?

9 A. I think it's best professional practice.  
10 You know, in my world when you see a new hydrologic  
11 discovery and so forth, you go to conferences, you see  
12 them, and I should think that leaders in organic  
13 chemistry do the same thing.

14 Q. Did you interview any ChemFab employee who  
15 said anything about getting secret test information from  
16 Dupont?

17 A. No.

18 Q. Did you read any deposition transcript that  
19 said anything about getting secret test information from  
20 Dupont?

21 A. No.

22 Q. Did you see any ChemFab document that  
23 referred to receiving any secret test information from  
24 Dupont?

25 A. No.

1 Q. Do you see any Dupont document that discussed  
2 disclosing any tests to ChemFab?

3 A. No.

4 Q. Or Saint-Gobain?

5 A. No.

6 Q. You say on Page 2-5 of your report that --  
7 let me see if I can find it for you. On the third  
8 paragraph, the second sentence starts with "Dupont." Do  
9 you see that?

10 A. Yes.

11 Q. It says -- you say, "Dupont also assisted  
12 ChemFab/Saint-Gobain with air pollution controls at the  
13 two plants and provided other technical assistance"?

14 A. Where is that?

15 Q. On Page 2-5?

16 A. Page 2-5.

17 Q. The third paragraph.

18 A. Okay.

19 Q. The second sentence.

20 A. Yes.

21 Q. You write, "Dupont also assisted ChemFab/  
22 Saint-Gobain with air pollution controls at the two  
23 plants and provided other technical assistance," right?

24 A. Yes.

25 Q. What are the air pollution controls that

1     you're referring to?

2           A.     I'd have to defer to our other expert who is  
3     familiar with that. I relied on his testimony.

4           Q.     Which testimony did you rely on?

5           A.     Hopke.

6           Q.     And apart from Hopke, do you have any  
7     independent opinion about the air pollution controls of  
8     the two plants?

9           A.     No, because that's not my expertise. I rely  
10    on the expertise of the people who know about the  
11    engineering practices.

12          Q.     So when you write here "Dupont assisted  
13    ChemFab with air pollution controls at the two plants,"  
14    what are you referring to in particular?

15          A.     I refer to -- if you wish, I can go to the  
16    Hopke report.

17          Q.     Sure.

18          A.     It may take a minute.

19                   MR. LaFATA: We've been going for an  
20    hour. Let's go off the record for a break.

21                   THE VIDEOGRAPHER: We're going off the  
22    record. This is the end of media unit  
23    number 3. The time off record is 1:59 p.m.

24                   (A recess was then taken.)

25                   THE VIDEOGRAPHER: Going back on record.

1           This marks the beginning of media unit 4.

2           The time is approximately 2:07 p.m. Please  
3           proceed.

4           BY MR. LaFATA:

5           Q.     Dr. Siegel, when we went on the break, we  
6           were looking for what air pollution controls were  
7           referenced on page 2-5. Do you recall that?

8           A.     I did find some contact with ChemFab --  
9           between ChemFab and Dupont on Page 4 addressing some  
10          catalyst issues but I can't find in this document the  
11          specifics on how Dupont assisted them with air pollution  
12          controls at the two plants but I do recall hearing about  
13          it, so it could have been through conversations with  
14          Mr. Hopke.

15          Q.     You also refer to other technical assistance  
16          in this sentence. Do you see that?

17          A.     Yes.

18          Q.     What does that refer to?

19          A.     Again, it's my recollection of, of  
20          conversations with Mr. Hopke but I can't recall the  
21          specifics of it. He was talking about the engineering  
22          aspects.

23          Q.     Do you remember when these conversations  
24          were?

25          A.     I don't recollect. Just sometime in the



1 past four months. I mean, it's -- the preparation of  
2 all materials.

3 Q. On 2-5 you don't refer to a conversation with  
4 Phil Hopke, do you?

5 A. No, I don't.

6 Q. You refer to a report by Mark Russell on  
7 Page 2-5 in the middle paragraph; do you see that?

8 A. Yes.

9 Q. You say he's a Dupont scientist?

10 A. That's what I understood.

11 Q. What are you referring to there?

12 A. He worked for Dupont in -- and he modeled --  
13 he was a chemist -- either a chemist or hydrologist who  
14 produced a -- basically a one-dimensional transport  
15 model through soils quite similar actually to the Rao  
16 model but he used a different equation to see how a  
17 mobile persistent chemical along the Ohio River could  
18 move through the soil and get to the river.

19 Q. Do you know Mark Russell at all?

20 A. No, I don't know Mark Russell.

21 Q. Have you talked to him at all?

22 A. No.

23 Q. Do you know what his credentials may be?

24 A. No, I don't, but I saw the model and it  
25 was -- it was done the way I would expect the model to

1 be done, of that kind.

2 Q. Was his report published in a peer-reviewed  
3 journal anywhere?

4 A. No.

5 Q. Do you -- have you seen any other documents  
6 by Mark Russell?

7 A. No.

8 Q. How did you get the document from Mark  
9 Russell -- by Mark Russell?

10 A. I don't recollect of how I got it. I think  
11 it again may have been produced by counsel as an  
12 internal memo or it could have come from a repository of  
13 documents associated with the case.

14 Q. Of this case?

15 A. No, not this case, with the Dupont issue --

16 Q. Okay.

17 A. -- in West Virginia.

18 Q. You mention here that PFOA was not directly  
19 mentioned in Russell's report, correct?

20 A. Correct.

21 Q. Do you know at the time that Mark Russell  
22 issued that report other chemicals Dupont was analyzing?

23 A. No, but I know there was contamination  
24 related to the PFOAs so it seemed -- that's a mobile  
25 persistent type of chemical, so it seemed to me to be

1 logical that's what he was trying to look at, to address  
2 the concerns that it might be getting out to the  
3 environment.

4 Q. You say Russell himself did not refer to PFOA  
5 in that report?

6 A. No, he did not.

7 Q. Did you read any interview with Russell or  
8 talk to him about this?

9 A. No.

10 Q. The last sentence on this Page 2-5 starts  
11 with "it is my professional judgment"?

12 A. Yes.

13 Q. Do you see that? "It is my professional  
14 judgment that ChemFab/Saint-Gobain either knew or should  
15 have known that PFOA emitted from their operations in  
16 North Bennington would have led to similar groundwater  
17 contamination in Bennington and North Bennington long  
18 before the widespread well contamination was first  
19 disclosed to the public in 2016."

20 A. Yes.

21 Q. That's your opinion in this case?

22 A. Yes.

23 Q. You don't refer to any ChemFab documents in  
24 support of that opinion, correct?

25 A. Correct.

1           Q.     You don't refer to any statements by  
2 witnesses, do you?

3           A.     No, but it was common knowledge at that time  
4 that air emissions of PFOA would occur from stacks of  
5 plants that are using and baking the emulsions as part  
6 of their process.

7           Q.     When you are refer to your "professional  
8 judgment," what professional judgment do you refer to?  
9 Let me rephrase that. When you say your "professional  
10 judgment," what do you mean?

11          A.     By professional judgment I refer to my  
12 understanding of what chemical companies knew in common  
13 practices as chemical industries evolved. So, for  
14 example, a long time ago I was involved in a case where  
15 I was addressing what did Dupont know about solvent  
16 contamination and its potential for environmental harm  
17 back in the '90s. So I did an historical review and  
18 then subsequently books have been produced saying how in  
19 general in the chemical industry people within a general  
20 industry are aware of what's going on.

21                 One book was called Beyond Love Canal, I  
22 believe, that was by Skinner, and so there's quite a bit  
23 of documentation. You know, the big chemical companies  
24 communicated with each other about potential problems.  
25 Now, I did not speak directly with any members of

1 ChemFab and say did you know and so forth.

2 Q. You knew ChemFab was a chemical company?

3 A. They used chemicals, okay.

4 Q. Do you use chemicals?

5 A. I do but not as much as ChemFab.

6 Q. Do you view Saint-Gobain as a chemical  
7 company?

8 A. Not a chemical company but a company that  
9 uses large amounts of industrial chemicals and hence  
10 they -- I have to believe they're aware of what they use  
11 and the possible risk of what they use in the  
12 environment.

13 Q. You talked about some book with respect to  
14 Love Canal. You don't refer to any book --

15 A. No.

16 Q. -- with respect to PFOA.

17 A. No, I do not.

18 Q. In support of this opinion about what ChemFab  
19 were saying they knew or either should have known, you  
20 don't refer to any basis in fact for that opinion,  
21 correct?

22 A. I think there's lot of basis of fact. A lot  
23 was known back, at least since 2003 and before then,  
24 according to documents cited in Hopke's report, that it  
25 was well-known enough that emissions of PFOA from stacks

1 occurred and could contaminate the environment.

2 And so it strikes me that  
3 Saint-Gobain/ChemFab must have been aware that this was  
4 a potential problem long before it was first discovered.

5 Q. That's speculation on your part, correct?

6 A. I think it's speculation based on common  
7 sense.

8 Q. Not based on a document for example?

9 A. That's correct.

10 Q. Do you recall giving any interviews on  
11 television in connection with your geochemistry methods?

12 A. Well, interviews on television? I had quite  
13 a few on hydraulic fracking, hydraulic fracturing. I  
14 don't recall interviews on television dealing with the  
15 methods I use in science. There may have been. I've  
16 been interviewed. I can't recollect that.

17 Q. Can I clarify? You said hydraulic fracturing  
18 and hydraulic fracking. Are they same --

19 A. Yeah, same thing. Hydraulic fracturing. I  
20 was on television a couple of times related to that.

21 Q. What was the context of that?

22 A. The context was my position it would not  
23 create serious contamination given my understanding of  
24 hydrogeology and geochemistry, except in very local  
25 cases.

1 Q. Was that some kind of news interview or how  
2 was it on TV?

3 A. It was -- I remember being at one TV  
4 occurrence. I was -- wasn't quite a debate. It was  
5 discussion with Oren Lyons of the Onondaga Nation and  
6 someone else who I can't remember, and we were asked  
7 questions about hydraulic fracking. Actually I think  
8 that's the only television one I was on other than  
9 testimony in Congress on C-Span. I was on the radio,  
10 interviewed by, what's her name out of Albany. She has  
11 a show and so I was interviewed on that.

12 Q. That was a news show?

13 A. Well, it's a talking head who interviews  
14 people on different things related to political issues,  
15 environmental issues.

16 Q. Do you recall giving a television interview  
17 on a cooking competition show?

18 A. A television interview? I was on a cooking  
19 competition show.

20 Q. What was that?

21 A. Cooks Versus Cons.

22 Q. What was the purpose of that?

23 A. I was competing.

24 Q. It was fun?

25 A. It was fun, yeah.

1 Q. Are those two different teams, cooks and  
2 cons?

3 A. No, it's an interesting line of questioning.  
4 I'm interested in where you're going with it. Two  
5 amateur cooks and professional cooks and we were given a  
6 competition to see who could cook the best and who could  
7 be identified as a professional or amateur.

8 Q. Do you recall any portion of that show,  
9 making a comment about the principles you used in  
10 geochemistry?

11 A. I can't remember the show. What show was  
12 it? Can you refresh my memory?

13 Q. Cooks Versus Cons.

14 A. Oh, that. Oh, okay. I vaguely remember  
15 what I said. I'd have to go back and look at it.

16 MR. DAVIS: I'm going to object to the  
17 line of questioning unless he provides you  
18 the statement that you supposedly said.

19 THE WITNESS: Yeah.

20 MR. DAVIS: You may answer if you can.

21 THE WITNESS: Yeah.

22 BY MR. LaFATA:

23 Q. Do you recall saying "what I like about  
24 cooking is that I apply the same principles as I do in  
25 geochemistry"?



1           A.     I remember that, yes.

2           Q.     On that show were you a cook or a con?

3           A.     Guess. I was a con.

4           Q.     Let me ask, in your scientific work do you  
5 subscribe to the view that scientific work should not be  
6 biased?

7           A.     That's correct.

8           Q.     Do you agree when you issue a scientific  
9 opinion, that an author should disclose any potential  
10 financial conflicts of interest that might affect that  
11 opinion?

12          A.     Any -- that's correct, any meaningful  
13 financial interest, right.

14          Q.     Are you sure that you do that when you do  
15 your scientific work?

16          A.     Yes, I do that.

17          Q.     In your scientific writings are you up front  
18 about any potential conflicts of interest that might  
19 affect the impartiality --

20          A.     Yes. Yes, I know where you're going and so  
21 I'll address it now. I wrote a paper related to  
22 hydraulic fracking where I was accused of not disclosing  
23 financial -- payment by Chesapeake Gas who provided me  
24 the data that I used to interpret the geochemistry and  
25 it created a bit of brouhaha. It was inadvertent.

1           Normally academics don't disclose unless you  
2           get a big grant or something like that where you have  
3           graduate students and so forth. I got one month's  
4           summer salary and that I thought at the time was kind of  
5           insufficient, and I spoke to my colleagues. I spoke to  
6           people in the publishing business and they said, no,  
7           it's not necessary to do it.

8           Well, once people made a big deal out of it,  
9           then I wrote a long disclosure and the journal never  
10          retracted the article. The journal never had a problem  
11          with it in terms of ethics nor did the university nor  
12          did anybody else except for certain opponents to what --  
13          certain people who didn't like what my report said.

14          And the report has never been refuted  
15          scientifically. No one addressed the science in it and  
16          I have actually even wrote a paper about the whole  
17          process of doing science in a contentious environment.  
18          Now I disclose everything however small.

19          Q.       Are you referring to a publication, 2015,  
20          Methane Concentrations in Water Wells Unrelated to  
21          Proximity to Existing Oil and Gas Wells in Northeastern  
22          Pennsylvania?

23          A.       That was the publication.

24          Q.       Was it that that paper that was issued did  
25          not have the disclosure about a summer -- month of

1 summer pay?

2 A. That's right, that's right.

3 Q. And there is a correction issued after that?

4 A. That's correct, yeah.

5 Q. And the correction is where you disclosed  
6 that you received the payments from who?

7 A. It was Chesapeake.

8 Q. That was paid directly to you?

9 A. Yes.

10 Q. Was it also their data you had used in the  
11 analysis, Chesapeake?

12 A. Yes, it is.

13 Q. Chesapeake is an oil company?

14 A. Yes, it is. Gas company.

15 Q. Gas company, natural gas?

16 A. Natural gas.

17 MR. LaFATA: Go off the record.

18 THE VIDEOGRAPHER: We are going off the  
19 record, time is approximately 2:24 p.m.

20 (A recess was then taken.)

21 THE VIDEOGRAPHER: We're going back on  
22 the record. The time is approximately  
23 2:30 p.m. Please proceed.

24 BY MR. LaFATA:

25 Q. Thank you, Dr. Siegel. Ready to continue

1 with the deposition?

2 A. I am.

3 Q. During the breaks or lunch today did you  
4 discuss the substance of the testimony with anybody?

5 A. No.

6 MR. LaFATA: Mr. Davis, pass the  
7 witness.

8 MR. DAVIS: Okay. I'm going to ask some  
9 questions based on your questions.

10

11 EXAMINATION BY MR. DAVIS:

12 Q. If you can turn to Exhibit I, I believe which  
13 is your second report, your merits report. This might  
14 be it here in front of you.

15 A. Yes.

16 Q. Okay. I want you to turn, first of all, to  
17 Page 1-1. Mr. LaFata asked you some questions about  
18 your opinions and the bases for them in this report.  
19 Can you just read out loud the paragraph 3, please?

20 A. "The industries involved in the  
21 manufacturing and use of PFOA were aware of the high  
22 solubility of PFOA and the likelihood that PFOA was  
23 present in precipitation downwind of manufacturing  
24 facilities since at least 2002 when the United States  
25 Environmental Protection Agency (US EPA) released the

1 widely circulated revised draft hazard assessment of  
2 Perfluorooctanoic acid and its salts, US EPA  
3 November 2002" --

4 Q. Can you stop right there, please?

5 A. Yeah.

6 Q. One question about that. Was this a source  
7 that you utilized for your opinion in your second  
8 opinion?

9 A. Yes, it was.

10 Q. Was this a publicly available source that  
11 would have been widely available throughout the  
12 industry?

13 A. Yes.

14 MR. LaFATA: Object to the form.

15 Q. Go ahead and read on, please.

16 A. "It was abundantly clear by 2003 when air  
17 distribution of PFOA was conclusively linked to distant  
18 groundwater contamination at the E.I. DuPont de Neours  
19 plant in Parkersburg, West Virginia. The plant  
20 manufactured PTFE dispersions containing PFOA used by  
21 ChemFab/Saint-Gobain Performance Plastics."

22 Q. Let me just ask if on Page 2-2 of your second  
23 report, Exhibit I, if the document that you were  
24 referring to and the sentence you just read is  
25 referenced on Page 2-2?

1 A. Yes, it's in the end of the first paragraph.

2 Q. Okay. What is that document, please?

3 A. That's an Order On Consent in the matter of  
4 EI DuPont de Neours & Company, Incorporated, Washington  
5 Works facility, EPA docket number -- numbers  
6 SDWA-03-2002-0019, SDWA-05-2002-0002, March 4th, 2002.

7 Q. Was this document a publicly available  
8 document?

9 A. Yes.

10 Q. Was the Dupont case, as you understand it,  
11 that's referred to here, widely publicized?

12 A. Yes.

13 Q. Look further down in the next paragraph,  
14 please.

15 A. Yes.

16 Q. And is there another document that you relied  
17 upon for your opinions?

18 A. Yes, the Ammonium Perfluorooctonate (C-8)  
19 Groundwater Investigation Steering Team Report, 2003.

20 Q. Was this document -- first of all, what was  
21 the conclusion of the document that you relied upon?

22 A. Well, this is -- the document showed that  
23 C-8 PFOA transported in air and deposited on land  
24 surfaces is likely to be mobilized by rain falling on  
25 the land and then migrate downward to surface and/or

1 groundwater.

2 Q. Is that what happened in the case in  
3 Bennington?

4 A. Yes.

5 Q. And if you can state whether or not this  
6 document that you just referenced, the 2003 document,  
7 was a publicly available document?

8 A. Yes, it was.

9 Q. Was it widely available?

10 MR. LaFATA: Object to the form.

11 A. I believe it was widely available.

12 Q. So is there anything speculative about your  
13 opinion that Saint-Gobain or ChemFab knew or should have  
14 known about the possibility or the likelihood even that  
15 the PFOA emitted into the air would end up in the  
16 groundwater in Bennington?

17 MR. LaFATA: Object to form.

18 A. I think they had to have known. I mean,  
19 given these EPA documents and the press coverage of the  
20 case and everything else.

21 Q. Okay. Let me turn your attention to some  
22 other questions asked by Mr. LaFata. Mr. LaFata was  
23 asking you about whether you took groundwater samples in  
24 Bennington and North Bennington; that was one question.  
25 Is it a practice in your field to rely upon samples

1 taken by others?

2 A. Yes.

3 Q. And in this case did you rely upon samples  
4 taken by others?

5 A. Yes, I did. There is a very large data set  
6 available for this particular site.

7 Q. Who generated that data?

8 A. The Vermont Department of Environmental  
9 Conservation or the Department of Health, whoever  
10 collected all the groundwater samples, EPA, Barr  
11 Engineering, the various consultants who worked on the  
12 Bennington Landfill; lately a broad group of academics  
13 who are studying the site who reported their findings at  
14 Northeast GSA a few days ago, and so there's a large  
15 amount of data that will be published in the near  
16 future, I presume, that will cover the issues of  
17 variability and so forth.

18 Q. You were also asked if you interviewed any of  
19 the Plaintiffs about their wells. Was there information  
20 available to you about the wells in this area?

21 A. Yes. The information comes from, again, all  
22 these public -- publicly available documents on the  
23 Vermont DEC website.

24 Q. Do experts in your field rely upon data like  
25 that about wells collected by other people?



1           A.       Commonly, and in fact, you know, the one  
2       reason I didn't go out and collect a lot of data or any  
3       data for that matter myself is I didn't feel we needed  
4       to. I think the distribution of the PFOA is -- speaks  
5       for itself of what the source is, coupled to the air  
6       modeling by multiple parties.

7           Q.       Well, let me ask you about your use of  
8       modeling in your first opinions on the class  
9       certification which also apply as well to the merits of  
10      the case. Why did you use modeling at all?

11          A.       Well, I don't think you need to model the  
12      site. In my world of modeling, and I've done it a lot,  
13      very complicated models down, using MODFLOW, MT3D and  
14      right down to very simple ones. I'm parsimonious. I  
15      use the model that I think best suits solving the  
16      scientific question that one deals with, and so I saw no  
17      reason to use a very complicated model in this case, as  
18      others might have done for all sorts of reasons, and I  
19      thought a very parsimonious approach, looking at  
20      vertical transport down, could give an appropriate  
21      determination of whether the timing -- approximate  
22      timing.

23          Q.       How did you use the model that you used in  
24      this case?

25                   MR. LaFATA: Object to form.

1           A.       Well, you have site -- you have an area of  
2       the -- where contamination occurred where you have very  
3       high concentrations, in the thousands of parts per  
4       billion, and that is due east of the Water Street plant.  
5       Then as you move further east, concentrations  
6       methodically get smaller and smaller, although there's a  
7       ton of fairly high concentrations going directly west to  
8       east and arriving sort of to the southwest of the  
9       landfill and then surrounded by lower concentrations,  
10      surrounded by lower concentrations still.

11                So where there are lower concentrations, not  
12      only because it's further away from the plant, it's  
13      because the geology is different and in particular  
14      they're thick sand and gravels in the valley, so I chose  
15      to just try what a model might show there for how long  
16      it would take and tried to see how long it would take,  
17      you know, closer to the plant.

18                And so that's the way I did it, and these  
19      I'd call two extremes of what might occur within the  
20      area of interest in general and the same approach could  
21      be used elsewhere but, again, this is -- this is not a,  
22      just a scanning approach. I mean, this is a reasonably  
23      robust model to determine when the center mass of  
24      contamination reaches groundwater. And that's what we  
25      determined, and what the National Academy reported and

1 it was very compelling. So that's the approach I used.

2 Q. If you go back to your first report,  
3 Exhibit B, please.

4 A. Here, B.

5 Q. Go to 1-1, summary of your opinions, please.

6 A. Okay.

7 Q. Let me just -- I'll read for you the opinion  
8 and I want to ask you a question about it with regard to  
9 the questions that Mr. LaFata asked. Number 1, "the  
10 zone of PFOA contamination designated by the State of  
11 Vermont reasonably represents the area where the  
12 groundwater has been contaminated with PFOA from the  
13 operations of the former ChemFab facilities on Water  
14 Street in North Bennington and Northside Drive in  
15 Bennington, and 'Saint-Gobain'." Did I read that  
16 correctly?

17 A. Correct.

18 Q. May I ask you, did you rely upon the model,  
19 the Rao model for this opinion?

20 A. No, I relied on the actual data of where  
21 contamination was discovered in groundwater in the area  
22 of interest and that's -- that's the ground truth. It's  
23 contaminated and it's completely consistent to an  
24 aerosol deposition from above. And then the modeling  
25 just simply was an exercise to see, okay, about how long

1 would it take.

2 To be perfectly honest, in my professional  
3 experience, and I've worked with recharge and so forth  
4 over my career, you give me 30 feet of gravel and sand,  
5 it's going to take 5, 10 years to get through, not  
6 shorter, depending on the permeability and the secondary  
7 porosity. If you have a real thin, it doesn't take that  
8 long. You don't need a model really.

9 Q. Let me ask about the second opinion here and  
10 I'll read it for you, too. "The air modeling of PFOA  
11 transport by Gary Yoder of TRM (2017) is consistent with  
12 and supports the conclusion that PFOA from the  
13 Saint-Gobain facilities was distributed through the air  
14 to contaminate groundwater and water wells throughout  
15 the North Bennington area."

16 Did you use the model to, the Rao model to  
17 support this opinion at all?

18 A. Well, I used the data from the air modeling  
19 and put it in -- produced by Yoder, which was similar to  
20 what was produced by independent modeling by the State  
21 of Vermont. And I used that as input to the Rao model  
22 to see if given those deposition rates, you could get  
23 more or less the concentrations that are observed.

24 Q. Did the Rao model confirm your second  
25 opinion?

1           A.       Yes.

2           Q.       You were asked extensive questions about your  
3       opinion number 3 so we're not going to go into that any  
4       further at the moment.

5                   And opinion number 4, you were asked about  
6       other potential sources and my question is, if you are  
7       presented with any information about other potential  
8       sources in any other publication, would you review that  
9       to determine whether it's credible or not?

10          A.       Absolutely.

11          Q.       If you do so, would you provide a  
12       supplemental report?

13          A.       Yes.

14          Q.       But today -- let me ask you this. You  
15       weren't asked about a recent publication by Barr  
16       Engineering that was published first in draft form in  
17       December of 2017 and in final form just a couple of days  
18       ago, in March of 2018, but have you reviewed those  
19       publications?

20          A.       I've reviewed them.

21          Q.       And do you intend to go back and review them  
22       in more detail and if you have any supplemental  
23       opinions, will you provide those?

24          A.       Yes, I would.

25          Q.       Have you reviewed the Vermont DEC's response

1 to those last two Barr publications that I mentioned?

2 A. Yes, I have. I looked through the reports  
3 first and then I looked at the Vermont comments and  
4 there was a lot of overlap in my view. I agreed with  
5 much of what they said.

6 Q. With regard especially to other potential  
7 sources of PFOA in the groundwater in Bennington and  
8 North Bennington, Vermont, have you reviewed those  
9 Vermont DEC comments?

10 A. Yes, and they found no plausible other  
11 sources.

12 Q. Do you agree with their comments?

13 A. Yes.

14 MR. DAVIS: I think that's all I have.

15

16 EXAMINATION BY MR. LaFATA:

17 Q. Just a few follow-up based on that.

18 Dr. Siegel, would you look back at Exhibit I, your  
19 second report? Here it is.

20 A. Thank you.

21 Q. You were asked a question about Page 2-2.  
22 Can you please turn there?

23 A. Mm-hmm.

24 Q. You were asked a question about two  
25 documents, one an Order On Consent and, two, below was a

1 second document. Do you recall those questions?

2 A. Yes.

3 Q. Do you recall testifying that those are  
4 public documents?

5 A. Yes.

6 Q. Do you know when they became public?

7 A. No, I don't. I imagine shortly after they  
8 were published.

9 Q. What is that imagined view based on?

10 A. Usually EPA and these sorts of legal  
11 matters, in my experience, are put up on either the web  
12 or made available quickly, you know, thereafter.  
13 They're public domain.

14 Q. Is it fair to say that's a general view  
15 rather than a view about these two particular documents?

16 A. It's a general view. I don't know exactly  
17 when they were put up.

18 MR. LaFATA: That's all, Mr. Davis.

19 MR. DAVIS: Okay.

20 MR. LaFATA: Thank you.

21 THE VIDEOGRAPHER: May we conclude,  
22 counsel?

23 MR. LaFATA: Yeah, we conclude. If we  
24 have a supplemental report, we'll keep it  
25 open.

1 THE VIDEOGRAPHER: We are off the record  
2 at approximately 2:47 p.m. and this concludes  
3 today's testimony of Donald Siegel, Ph.D.  
4 The total number of media units was four and  
5 will be retained by Veritext Legal Solutions.

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1                   **ACKNOWLEDGMENT OF DEPONENT**

2       I, DONALD I. SIEGEL, Ph.D., do hereby certify  
 3       that I have read the foregoing transcript of my  
 4       testimony taken on 3/22/18, and further certify  
 5       that it is a true and accurate record of my  
 6       testimony (with the exception of the corrections  
 7       listed below):

8	Page	Line	Correction
9	_____	_____	_____
10	_____	_____	_____
11	_____	_____	_____
12	_____	_____	_____
13	_____	_____	_____
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19	_____	_____	_____
20	_____	_____	_____

21                   \_\_\_\_\_  
                     DONALD I. SIEGEL, Ph.D.

22                   **SUBSCRIBED AND SWORN TO BEFORE ME**

23       THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_.

24                   \_\_\_\_\_  
 25       (NOTARY PUBLIC)

\_\_\_\_\_  
 MY COMMISSION EXPIRES:

REPORTER'S CERTIFICATE

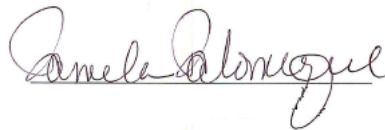
I, PAMELA PALOMEQUE, NYRCR, RPR, CRR, and  
Notary Public, certify:

That the foregoing proceedings were taken before me  
at the time and place therein set forth, at which time  
the witness was put under oath by me;

That the testimony of the witness and all  
objections made at the time of the examination were  
recorded stenographically by me and were thereafter  
transcribed;

That the foregoing is a true and correct transcript  
of my shorthand notes so taken;

I further certify that I am not a relative or  
employee of any attorney or of any of the parties nor  
financially interested in the action.

A handwritten signature in cursive script, reading "Pamela Palomeque", written in dark ink. The signature is fluid and stylized, with the first and last names being more prominent.

PAMELA PALOMEQUE, NYRCR, RPR, CRR  
Notary Public

[&amp; - 23]

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

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COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

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